Appendix L
Ecological Risk Assessment

Appendix L1

Appendix L1-1. Comparison of Minimum Reporting Limit Range in Surface Soil to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	Arithmetic Mean	95% UCL	RME	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Metals (mg/kg)											
Aluminum	33	33	100%		3570	15800	9138.79	10200	10200		
Antimony	1	38	3%	0.28 - 11.2	2.1	2.1	0.64	571	2.1	78	No
Arsenic	38	38	100%		1.6	4.63	2.93	3.17	3.17		
Barium	38	38	100%		50.9	187	97.65	105	105		
Beryllium	10	38	26%	0.03 - 0.49	0.09	0.31	0.13	0.191	0.191	40	No
Cadmium	33	38	87%	1.05 - 1.12	0.09	1	0.6	0.699	0.699	28	No
Calcium	33	33	100%		1590	25200	5236.52	6050	6050		
Chromium	38	38	100%		4.4	15.8	9.98	10.9	10.9		
Cobalt	38	38	100%		2.5	7.6	4.59	4.97	4.97		
Copper	38	38	100%		2.4	10.8	6.24	7.08	7.08		
Iron	33	33	100%		5880	19400	11592.27	12600	12600		
Lead	38	38	100%		1.6	20.7	7.07	8.89	8.89		
Magnesium	33	33	100%		1780	6900	4022.58	4460	4460		
Manganese	38	38	100%		104	289	185.67	198	198		
Mercury	33	38	87%	0.1 - 0.11	0.069	0.069	0.03	0.0354	0.0354	0.1	Yes
Molybdenum	0	5	0%	2.1 - 2.24			1.09	1.11		2	Yes
Nickel	37	38	97%	2.14 - 2.14	4.4	13.7	7.18	8.28	8.28	30	No
Potassium	33	33	100%		1100	3970	2445.64	2700	2700		
Selenium	20	38	53%	0.62 - 1.12	0.27	1.1	0.49	0.543	0.543	1	Yes
Silver	1	38	3%	1 - 2.24	2	2	0.66	0.715	0.715	2	No
Sodium	0	33	0%	11.2 - 250			91.56	164		--	--
Thallium	0	38	0%	0.81 - 1.32			0.46	0.475		1	Yes
Vanadium	38	38	100%		13.5	44.1	26	28.1	28.1		
Zinc	38	38	100%		15.8	57.1	34.78	38.2	38.2		
Volatile Organics (ug/kg)											
1,1,1,2-Tetrachloroethane	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
1,1,1-Trichloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,1,2,2-Tetrachloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,1,2-Trichloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,1,2-Trichlorotrifluoroethane (Freon 113)	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
1,1,-Dichloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,1,-Dichloroethene	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,2,3-Trichloropropane	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
1,2-Dichloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
1,2-Dichlorotetrafluoroethane (Freon 114)	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
1,2-Dichlorpropane	0	42	0%	4.8 - 16			2.99	3.15		700000	No
2-Butanone (Methyl Ethyl Ketone, MEK)	0	38	0%	53 - 160			54.13	57.2		--	--
2-Chloroethyl vinyl ether	0	5	0%	53 - 160			47.4	92.5		--	--
2-Hexanone	0	42	0%	48 - 160			29.92	31.5		--	--
4-Methyl-2-pentanone (MIBK)	0	42	0%	48 - 160			29.92	31.5		--	--
Acetone	2	38	5%	53 - 160	46	100	56.12	59.2	59.2	--	--
Benzene	0	38	0%	4.8 - 16			3.02	3.2		--	--
Bromodichloromethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
Bromoform	0	42	0%	4.8 - 16			2.99	3.15		--	--

Appendix L1-1. Comparison of Minimum Reporting Limit Range in Surface Soil to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	Arithmetic Mean	95% UCL	RME	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Bromomethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
Carbon Disulfide	0	42	0%	4.8 - 16			2.99	3.15		--	--
Carbon Tetrachloride	0	42	0%	4.8 - 16			2.99	3.15		--	--
Chlorobenzene	0	42	0%	4.8 - 16			2.99	3.15		40000	No
Chloroethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
Chloroform	0	38	0%	4.8 - 16			3.02	3.2		--	--
Chloromethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
cis-1,2-Dichloroethene	0	42	0%	4.8 - 16			2.99	3.15		--	--
cis-1,3-Dichloropropene	0	42	0%	4.8 - 16			2.99	3.15		--	--
Dibromochloromethane	0	42	0%	4.8 - 16			2.99	3.15		--	--
Dichlorodifluoromethane (F12)	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
Di-Isopropyl Ether (DIPE)	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
Ethyl Benzene	0	42	0%	4.8 - 16			2.99	3.15		--	--
Ethyl Tertiary Butyl Ether	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
Methyl tert-Butyl Ether (MTBE)	0	42	0%	4.8 - 32			3.56	3.86		--	--
Methylene Chloride	1	38	3%	4.8 - 16	9.2	9.2	3.16	3.39	3.39	--	--
Styrene	0	38	0%	4.8 - 16			3.02	3.2		300000	No
Tertiary Amyl Methyl Ether	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
Tertiary Butyl Alcohol (TBA)	0	37	0%	19 - 26			11.07	11.3		--	--
Tetrachloroethene (PCE)	0	42	0%	4.8 - 16			2.99	3.15		--	--
Toluene	0	42	0%	4.8 - 16			2.99	3.15		200000	No
trans-1,2-Dichloroethene	0	42	0%	4.8 - 16			2.99	3.15		--	--
trans-1,3-dichloropropene	0	42	0%	4.8 - 16			2.99	3.15		--	--
Trichloroethene (TCE)	0	42	0%	4.8 - 16			2.99	3.15		--	--
Trichlorofluoromethane (Freon 11)	0	37	0%	4.8 - 6.4			2.76	2.81		--	--
Vinyl Acetate	0	5	0%	53 - 160			47.4	92.5		--	--
Vinyl Chloride	0	42	0%	4.8 - 16			2.99	3.15		--	--
Xylenes, Total	0	42	0%	5.3 - 19			7.87	8.53		--	--
Semivolatile Organics (ug/kg)											
1,2,4-Trichlorobenzene	0	42	0%	350 - 21000			571.19	500		20000	Yes
1,2-Dichlorobenzene	0	42	0%	350 - 21000			571.19	500		--	--
1,3-Dichlrobenzene	0	42	0%	350 - 21000			571.19	500		--	--
1,4-Dichlorobenzene	0	42	0%	350 - 21000			571.19	500		20000	Yes
2,2'-oxybis(1-Chloropropane)	0	37	0%	520 - 1200			306.35	324		--	--
2,4,5-Trichlorophenol	0	42	0%	520 - 52000			1018.69	695		4000	Yes
2,4,6-Trichlorophenol	0	42	0%	350 - 21000			571.19	500		10000	Yes
2,4-Dichlorophenol	0	42	0%	350 - 21000			571.19	500		--	--
2,4-Dimethylphenol	0	42	0%	350 - 21000			571.19	500		--	--
2,4-Dinitrotoluene	0	42	0%	350 - 21000			571.19	500		--	--
2,6-Dinitrotoluene	0	42	0%	350 - 21000			571.19	500		--	--
2,4-Dinitrophenol	0	42	0%	890 - 52000			2097.62	2140		20000	Yes
2-Chloronaphthalene	0	42	0%	350 - 21000			571.19	500		--	--
2-Chlorophenol	0	42	0%	350 - 21000			571.19	500		--	--
2-Methyl-4,6-Dinitrophenol	0	42	0%	890 - 52000			2097.62	2140		--	--
2-Methylnaphthalene	0	37	0%	25 - 51			14.22	14.7		--	--

Appendix L1-1. Comparison of Minimum Reporting Limit Range in Surface Soil to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	Arithmetic Mean	95% UCL	RME	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
2-Methylphenol (o-Cresol)	0	42	0%	350 - 21000			571.19	500		--	--
2-Nitroaniline	0	42	0%	890 - 52000			2097.62	2140		--	--
2-Nitrophenol	0	42	0%	350 - 21000			571.19	500		--	--
3,3'-Dichlorobenzene	0	42	0%	350 - 21000			840.6	856		--	--
3/4-Methylphenol (M/P-Cresol)	0	38	0%	350 - 21000			601.32	532		--	--
3-Nitroaniline	0	42	0%	890 - 52000			2097.62	2140		--	--
4-bromophenyl-phenylether	0	42	0%	350 - 21000			571.19	500		--	--
4-Chloro-3-Methylphenol	0	42	0%	350 - 21000			571.19	500		--	--
4-Chloroaniline	0	42	0%	350 - 21000			840.6	856		--	--
4-Chlorophenyl-phenyl ether	0	42	0%	350 - 21000			571.19	500		--	--
4-Nitroaniline	0	42	0%	890 - 52000			2097.62	2140		--	--
4-Nitrophenol	0	42	0%	890 - 52000			2097.62	2140		7000	Yes
Acenaphthene	0	37	0%	25 - 51			14.22	14.7		20000	No
Acenaphthylene	0	37	0%	25 - 51			14.22	14.7		--	--
Anthracene	1	33	3%	25 - 32	44	44	14.78	15.6	15.6	--	--
Benzo(a)Anthracene	7	33	21%	25 - 32	7	730	35.64	26	26	--	--
Benzo(a)pyrene	4	33	12%	25 - 32	10	1030	44.52	27.7	27.7	--	--
Benzo(b)Fluoranthene	5	33	15%	25 - 32	8	1790	68.25	33.6	33.6	--	--
Benzo(g,h,i)Perylene	4	33	12%	25 - 32	7	440	26.58	22.8	22.8	--	--
Benzo(k)Fluoranthene	4	33	12%	25 - 32	7	510	28.61	23.4	23.4	--	--
Bis (2-chloroisopropyl)ether	0	5	0%	350 - 21000			2531	2290000		--	--
bis(2-Chloroethoxy) Methane	0	42	0%	350 - 21000			571.19	500		--	--
bis(2-Chloroethyl) Ether	0	42	0%	35 - 21000			366.73	221		--	--
bis(2-Ethylhexyl) Phthalate	3	38	8%	350 - 21000	51	70	62	87.9	70	--	--
Butylbenzylphthalate	0	42	0%	350 - 21000			571.19	500		--	--
Carbazone	0	37	0%	520 - 1200			306.35	324		--	--
Chrysene	4	33	12%	25 - 32	8	870	39.84	27	27	--	--
Dibenz(a,h)Anthracene	1	33	3%	25 - 32	97	97	16.39	17.4	17.4	--	--
Dibenzofuran	0	42	0%	350 - 21000			571.19	500		--	--
Diethylphthalate	2	38	5%	360 - 21000	96	225	167	1120	225	100000	No
Dimethylphthalate	0	42	0%	350 - 21000			571.19	500		--	--
di-N-Butylphthalate	0	42	0%	350 - 21000			571.19	500		200000	No
di-N-Octylphthalate	0	42	0%	350 - 21000			571.19	500		--	--
Fluoranthene	5	33	15%	25 - 32	8	1000	43.55	27.5	27.5	--	--
Fluorene	0	37	0%	25 - 51			14.22	14.7		--	--
Hexachlorbenzene	1	38	3%	35 - 21000	150	150	83.75		150	--	--
Hexachlorobutadiene	0	42	0%	350 - 21000			571.19	500		--	--
Hexachlorocyclopentadiene	0	42	0%	350 - 21000			1650.12	1980		10000	Yes
Hexachloroethane	0	42	0%	350 - 21000			571.19	500		--	--
indeno(1,2,3-c,d)Pyrene	2	33	6%	25 - 32	15	460	27.43	23.2	23.2	--	--
Isophorone	0	37	0%	520 - 1200			306.35	324		--	--
Naphthalene	0	37	0%	25 - 51			14.22	14.7		--	--
Nitrobenzene	0	42	0%	350 - 21000			571.19	500		--	--
N-Nitrosodi-N-Propylamine	0	42	0%	30 - 16000			228.82	75.1		--	--
N-Nitroso-Diphenylamine	0	42	0%	350 - 21000			1650.12	1980		--	--

Appendix L1-1. Comparison of Minimum Reporting Limit Range in Surface Soil to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	Arithmetic Mean	95% UCL	RME	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Pentachlorophenol	0	42	0%	180 - 21000			1210	1420		3000	Yes
Phenanthrene	2	33	6%	25 - 32	9	290	22.05	20.9	20.9	--	--
Phenol	12	38	32%	350 - 21000	110	936	360.62	419	419	30000	No
Pyrene	5	33	15%	25 - 32	11	960	42.61	27.5	27.5	--	--
Dioxins (pg/g)											
Total 2,3,7,8-TCDD Bird	11	11	100%	-	0.01	35.3	3.81	126	35.3		
Total 2,3,7,8-TCDD Mammal	11	11	100%	-	0.05	18.4	2.21	9.99	9.99		
Miscellaneous (ug/kg)											
Perchlorate	0	2	0%	500 - 500			250			--	--

NOTES:

(1) The lesser of plant screening value (Efroymson et al., 1997a) or soil invertebrate screening value (Efroymson et al., 1997b).

ORNL = Oak Ridge National Laboratory

-- Screening value not available

mg/kg = milligrams per kilogram

ug/kg = micrograms per kilogram

pg/g = picograms per gram

Appendix L1-2. Comparison of Minimum Reporting Limit Range in Sediment to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Metals (mg/kg)								
Aluminum	4	4	100%		1750	3050		
Antimony	0	4	0%	3.3 - 3.6			78	No
Arsenic	3	4	75%	0.94 - 0.94	1.4	1.8	10	No
Barium	4	4	100%		25.6	110		
Beryllium	0	4	0%	0.22 - 0.24			40	No
Cadmium	2	4	50%	0.16 - 0.17	0.23	0.26	28	No
Calcium	4	4	100%		2620	4570		
Chromium	4	4	100%		2.5	4.4		
Cobalt	4	4	100%		1.2	2		
Copper	4	4	100%		1.3	2.5		
Iron	4	4	100%		2700	5050		
Lead	4	4	100%		1	1.9		
Magnesium	4	4	100%		898	1610		
Manganese	4	4	100%		54.6	130		
Mercury	1	4	25%	0.22 - 0.24	0.006	0.006	0.1	Yes
Nickel	4	4	100%		1.6	2.8		
Potassium	4	4	100%		418	821		
Selenium	1	4	25%	0.33 - 0.36	0.17	0.17	1	No
Silver	0	4	0%	0.55 - 0.59			2	No
Sodium	2	4	50%	110 - 120	23.1	47.7	--	--
Thallium	0	4	0%	0.44 - 0.47			1	No
Vanadium	4	4	100%		7.5	13.9		
Zinc	4	4	100%		7.3	13.5		
Volatile Organics (ug/kg)								
1,1-Dichloroethane	0	4	0%	5.5 - 6.1			--	--
1,1-Dichloroethene	0	4	0%	5.5 - 6.1			--	--
1,1,1,2-Tetrachloroethane	0	4	0%	5.5 - 6.1			--	--
1,1,1-Trichloroethane	0	4	0%	5.5 - 6.1			--	--
1,1,2,2-Tetrachloroethane	0	4	0%	5.5 - 6.1			--	--
1,1,2-Trichloroethane	0	4	0%	5.5 - 6.1			--	--

Appendix L1-2. Comparison of Minimum Reporting Limit Range in Sediment to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
1,1,2-Trichlorotrifluoroe	0	4	0%	5.5 - 6.1			--	--
1,2,3-Trichloropropane	0	4	0%	5.5 - 6.1			--	--
1,2-Dichloroethane	0	4	0%	5.5 - 6.1			--	--
1,2-Dichlorotetrafluoroethane (Freon 114)	0	4	0%	5.5 - 6.1			--	--
1,2-Dichlorpropane	0	4	0%	5.5 - 6.1			7000	No
2-Butanone (Methyl Ethyl Ketone, MEK)	0	4	0%	110 - 120			--	--
2-Hexanone	0	4	0%	55 - 61			--	--
4-Methyl-2-pentanone (MIBK)	0	4	0%	55 - 61			--	--
Acetone	0	4	0%	110 - 120			--	--
Benzene	0	4	0%	5.5 - 6.1			--	--
Bromodichloromethane	0	4	0%	5.5 - 6.1			--	--
Bromoform	0	4	0%	5.5 - 6.1			--	--
Bromomethane	0	4	0%	5.5 - 6.1			--	--
Carbon Disulfide	0	4	0%	5.5 - 6.1			--	--
Carbon Tetrachloride	0	4	0%	5.5 - 6.1			--	--
Chlorobenzene	0	4	0%	5.5 - 6.1			40000	No
Chloroethane	0	4	0%	5.5 - 6.1			--	--
Chloroform	0	4	0%	5.5 - 6.1			--	--
Chloromethane	0	4	0%	5.5 - 6.1			--	--
Cis-1,2-Dichloroethene	0	4	0%	5.5 - 6.1			--	--
Cis-1,3-Dichloropropene	0	4	0%	5.5 - 6.1			--	--
Di-Isopropyl Ether (DIPE)	0	4	0%	5.5 - 6.1			--	--
Dibromochloromethane	0	4	0%	5.5 - 6.1			--	--
Dichlorodifluoromethane (F12)	0	4	0%	5.5 - 6.1			--	--
Ethyl Benzene	0	4	0%	5.5 - 6.1			--	--
Ethyl Tertiary Butyl Ether	0	4	0%	5.5 - 6.1			--	--
Methyl tert-Butyl Ether (MTBE)	0	4	0%	5.5 - 6.1			--	--
Methylene Chloride	0	4	0%	5.5 - 6.1			--	--
Styrene	0	4	0%	5.5 - 6.1			300000	No
Tertiary Amyl Methyl Ether	0	4	0%	5.5 - 6.1			--	--
Tertiary Butyl Alcohol (TBA)	0	4	0%	22 - 24			--	--

Appendix L1-2. Comparison of Minimum Reporting Limit Range in Sediment to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Tetrachloroethene (PCE)	0	4	0%	5.5 - 6.1			--	--
Toluene	0	4	0%	5.5 - 6.1			200000	No
Trans-1,2-Dichloroethene	0	4	0%	5.5 - 6.1			--	--
Trans-1,3-dichloropropene	0	4	0%	5.5 - 6.1			--	--
Trichloroethene (TCE)	0	4	0%	5.5 - 6.1			--	--
Trichlorofluoromethane (Freon 11)	0	4	0%	5.5 - 6.1			--	--
Vinyl Chloride	0	4	0%	5.5 - 6.1			--	--
Xylenes, Total	0	4	0%	17 - 18			--	--
Semivolatile Organics (ug/kg)								
1,2,4-Trichlorobenzene	0	4	0%	550 - 590			20000	No
1,2-Dichlorobenzene	0	4	0%	550 - 590			--	--
1,3-Dichlrobenzene	0	4	0%	550 - 590			--	--
1,4-Dichlorobenzene	0	4	0%	550 - 590			20000	No
2,2'-oxybis(1-Chloropropane)	0	4	0%	550 - 590			--	
2,4,5-Trichlorophenol	0	4	0%	550 - 590			4000	No
2,4,6-Trichlorophenol	0	4	0%	550 - 590			10000	No
2,4-Dichlorophenol	0	4	0%	550 - 590			--	--
2,4-Dimethylphenol	0	4	0%	550 - 590			--	--
2,4-Dinitrotoluene	0	4	0%	550 - 590			--	--
2,6-Dinitrotoluene	0	4	0%	550 - 590			--	--
2-Chloronaphthalene	0	4	0%	550 - 590			--	--
2-Chlorophenol	0	4	0%	550 - 590			--	--
2-Methyl-4,6-Dinitrophenol	0	4	0%	2700 - 3000			--	--
2-Methylphenol (o-Cresol)	0	4	0%	550 - 590			--	--
2-Nitroaniline	0	4	0%	2700 - 3000			--	--
2-Nitrophenol	0	4	0%	550 - 590			--	--
2,4-Dinitrophenol	0	4	0%	2700 - 3000			20000	No
3,3'-Dichlorobenzene	0	4	0%	1100 - 1200			--	--
3-Nitroaniline	0	4	0%	2700 - 3000			--	--
3/4-Methylphenol (M/P-Cresol)	0	4	0%	550 - 590			--	--
4-bromophenyl-phenylether	0	4	0%	550 - 590			--	--

Appendix L1-2. Comparison of Minimum Reporting Limit Range in Sediment to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
4-Chloro-3-Methylphenol	0	4	0%	550 - 590			--	--
4-Chloroaniline	0	4	0%	1100 - 1200			--	--
4-Chlorophenyl-phenyl ether	0	4	0%	550 - 590			--	--
4-Nitroaniline	0	4	0%	2700 - 3000			--	--
4-Nitrophenol	0	4	0%	2700 - 3000			7000	No
Bis(2-Chloroethoxy) Methane	0	4	0%	550 - 590			--	--
Bis(2-Chloroethyl) Ether	0	4	0%	180 - 190			--	--
Bis(2-Ethylhexyl) Phthalate	0	4	0%	550 - 590			--	--
Butylbenzylphthalate	0	4	0%	550 - 590			--	--
Carbazone	0	4	0%	550 - 590			--	--
Di-N-Butylphthalate	0	4	0%	550 - 590			200000	No
Di-N-Octylphthalate	0	4	0%	550 - 590			--	--
Dibenzofuran	0	4	0%	550 - 590			--	--
Diethylphthalate	0	4	0%	550 - 590			100000	No
Dimethylphthalate	0	4	0%	550 - 590			200000	No
Hexachlorbenzene	0	4	0%	550 - 590			--	--
Hexachlorobutadiene	0	4	0%	550 - 590			--	--
Hexachlorocyclopentadiene	0	4	0%	2700 - 3000			10000	No
Hexachloroethane	0	4	0%	550 - 590			--	--
Isophorone	0	4	0%	550 - 590			--	--
N-Nitroso-Diphenylamine	0	4	0%	2700 - 3000			20000	No
N-Nitrosodi-N-Propylamine	0	4	0%	43 - 46			--	--
Nitrobenzene	0	4	0%	550 - 590			40000	No
Pentachlorophenol	0	4	0%	1900 - 2000			3000	No
Phenol	0	4	0%	550 - 590			30000	No
2-Methylnaphthalene	0	4	0%	27 - 30			--	--
Acenaphthene	0	4	0%	27 - 30			20000	No
Acenaphthylene	0	4	0%	27 - 30			--	--
Anthracene	0	4	0%	27 - 30			--	--
Benzo(a)Anthracene	0	4	0%	27 - 30			--	--
Benzo(a)pyrene	0	4	0%	27 - 30			--	--

Appendix L1-2. Comparison of Minimum Reporting Limit Range in Sediment to Ecological Screening Values for Lower Level Trophic Organisms

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	ORNL Soil Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Benzo(b)Fluoranthene	0	4	0%	27 - 30			--	--
Benzo(g,h,I)Perylene	0	4	0%	27 - 30			--	--
Benzo(k)Fluoranthene	0	4	0%	27 - 30			--	--
Chrysene	0	4	0%	27 - 30			--	--
Dibenz(a,h)Anthracene	0	4	0%	27 - 30			--	--
Fluoranthene	0	4	0%	27 - 30			--	--
Fluorene	0	4	0%	27 - 30			30000	No
Indeno(1,2,3-c,d)Pyrene	0	4	0%	27 - 30			--	--
Naphthalene	0	4	0%	27 - 30			--	--
Phenanthrene	0	4	0%	27 - 30			--	--
Pyrene	0	4	0%	27 - 30			--	--

NOTES:

(1) The lesser of plant screening value (Efroymson et al., 1997a) or soil invertebrate screening value (Efroymson et al., 1997b).

ORNL = Oak Ridge National Laboratory

-- Screening value not available

mg/kg = milligrams per kilogram

ug/kg = micrograms per kilogram

Appendix L1-3. Comparison of Minimum Reporting Limit Range in Surface Water to Ecological Screening Values for the Protection of Aquatic Life

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	NRWQC Surface Water Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Metals (ug/L)								
Aluminum	2	2	100%		86400	87500		
Antimony	0	2	0%	60 - 60			--	--
Arsenic	2	2	100%		33.8	34.2		
Barium	2	2	100%		867	871		
Berylium	2	2	100%		2.7	2.7		
Cadmium	2	2	100%		6	6.4		
Calcium	2	2	100%		109000	115000		
Chromium	2	2	100%		80.2	83.5		
Cobalt	2	2	100%		30.8	31.5		
Copper	0	2	0%	73 - 74.4			9	Yes
Iron	2	2	100%		70300	71900		
Lead	2	2	100%		26.7	28.2		
Magnesium	2	2	100%		49300	50400		
Manganese	2	2	100%		1070	1070		
Mercury	0	2	0%	0.13 - 0.19			0.77	No
Nickel	2	2	100%		75.5	78.5		
Potassium	2	2	100%		18000	19300		
Selenium	0	2	0%	5 - 5			--	--
Silver	0	2	0%	10 - 10			--	--
Sodium	2	2	100%		79000	79700		
Thallium	0	2	0%	2.7 - 4			--	--
Vanadium	2	2	100%		222	227		
Zinc	2	2	100%		242	286		
Volatile Organics (ug/L)								
1,1,1,2-Tetrachloroethane	0	2	0%	0.5 - 0.5			--	--
1,1,1-Trichloroethane	0	2	0%	1 - 1			--	--
1,1,2,2-Tetrachloroethane	0	2	0%	1 - 1			--	--
1,1,2-Trichloroethane	0	2	0%	1 - 1			--	--
1,1,2-Trichlorotrifluoroe	0	2	0%	5 - 5			--	--
1,1,-Dichloroethane	0	2	0%	1 - 1			--	--
1,1,-Dichloroethene	0	2	0%	1 - 1			--	--

Appendix L1-3. Comparison of Minimum Reporting Limit Range in Surface Water to Ecological Screening Values for the Protection of Aquatic Life

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	NRWQC Surface Water Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
1,2,3-Trichloropropane	0	2	0%	0.5 - 0.5			--	--
1,2-Dichloroethane	0	2	0%	0.5 - 0.5			--	--
1,2-Dichlorotetrafluoroethane (Freon 114)	0	2	0%	5 - 5			--	--
1,2-Dichlorpropane	0	2	0%	1 - 1			--	--
2-Butanone (Methyl Ethyl Ketone, MEK)	0	2	0%	100 - 100			--	--
2-Hexanone	0	2	0%	50 - 50			--	--
4-Methyl-2-pentanone (MIBK)	0	2	0%	50 - 50			--	--
Acetone	0	2	0%	100 - 100			--	--
Benzene	0	2	0%	1 - 1			--	--
Bromodichloromethane	0	2	0%	0.1 - 0.1			--	--
Bromoform	0	2	0%	1 - 1			--	--
Bromomethane	0	2	0%	1 - 1			--	--
Carbon Disulfide	0	2	0%	1 - 1			--	--
Carbon Tetrachloride	0	2	0%	0.5 - 0.5			--	--
Chlorobenzene	0	2	0%	1 - 1			--	--
Chloroethane	0	2	0%	1 - 1			--	--
Chloroform	0	2	0%	0.1 - 0.1			--	--
Chloromethane	0	2	0%	1 - 1			--	--
Cis-1,2-Dichloroethene	0	2	0%	1 - 1			--	--
Cis-1,3-Dichloropropene	0	2	0%	0.5 - 0.5			--	--
Dibromochloromethane	0	2	0%	0.1 - 0.1			--	--
Dichlorodifluoromethane (F12)	0	2	0%	1 - 1			--	--
Di-Isopropyl Ether (DIPE)	0	2	0%	5 - 5			--	--
Ethyl Benzene	0	2	0%	1 - 1			--	--
Ethyl Tertiary Butyl Ether	0	2	0%	5 - 5			--	--
Methyl tert-Butyl Ether (MTBE)	0	2	0%	3 - 3			--	--
Methylene Chloride	0	2	0%	5 - 5			--	--
Styrene	0	2	0%	1 - 1			--	--
Tertiary Amyl Methyl Ether	0	2	0%	5 - 5			--	--
Tertiary Butyl Alcohol (TBA)	0	2	0%	2 - 2			--	--
Tetrachloroethene (PCE)	0	2	0%	1 - 1			--	--
Toluene	0	2	0%	1 - 1			--	--

Appendix L1-3. Comparison of Minimum Reporting Limit Range in Surface Water to Ecological Screening Values for the Protection of Aquatic Life

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	NRWQC Surface Water Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Trans-1,2-Dichloroethene	0	2	0%	1 - 1			--	--
Trans-1,3-dichloropropene	0	2	0%	0.5 - 0.5			--	--
Trichloroethene (TCE)	0	2	0%	1 - 1			--	--
Trichlorofluoromethane (Freon 11)	0	2	0%	5 - 5			--	--
Vinyl Chloride	0	2	0%	0.5 - 0.5			--	--
Xylenes, Total	0	2	0%	1 - 1			--	--
Semivolatile Organics (ug/L)								
1,2,4-Trichlorobenzene	0	2	0%	9.6 - 9.6			--	--
1,2-Dichlorobenzene	0	2	0%	9.6 - 9.6			--	--
1,3-Dichlrobenzene	0	2	0%	9.6 - 9.6			--	--
1,4-Dichlorobenzene	0	2	0%	4.8 - 4.8			--	--
2,2'-oxybis(1-Chloropropane)	0	2	0%	9.6 - 9.6			--	--
2,4,5-Trichlorophenol	0	2	0%	9.6 - 9.6			--	--
2,4,6-Trichlorophenol	0	2	0%	4.8 - 4.8			--	--
2,4-Dichlorophenol	0	2	0%	9.6 - 9.6			--	--
2,4-Dimethylphenol	0	2	0%	9.6 - 9.6			--	--
2,4-Dinitrotoluene	0	2	0%	9.6 - 9.6			--	--
2,6-Dinitrotoluene	0	2	0%	9.6 - 9.6			--	--
2.4-Dinitrophenol	0	2	0%	48 - 48			--	--
2-Chloronaphthalene	0	2	0%	9.6 - 9.6			--	--
2-Chlorophenol	0	2	0%	9.6 - 9.6			--	--
2-Methyl-4,6-Dinitrophenol	0	2	0%	48 - 48			--	--
2-Methylphenol (o-Cresol)	0	2	0%	9.6 - 9.6			--	--
2-Nitroaniline	0	2	0%	48 - 48			--	--
2-Nitrophenol	0	2	0%	9.6 - 9.6			--	--
3,3'-Dichlorobenzene	0	2	0%	9.6 - 9.6			--	--
3/4-Methylphenol (M/P-Cresol)	0	2	0%	9.6 - 9.6			--	--
3-Nitroaniline	0	2	0%	48 - 48			--	--
4-bromophenyl-phenylether	0	2	0%	9.6 - 9.6			--	--
4-Chloro-3-Methylphenol	0	2	0%	9.6 - 9.6			--	--
4-Chloroaniline	0	2	0%	19 - 19			--	--
4-Chlorophenyl-phenyl ether	0	2	0%	9.6 - 9.6			--	--

Appendix L1-3. Comparison of Minimum Reporting Limit Range in Surface Water to Ecological Screening Values for the Protection of Aquatic Life

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	NRWQC Surface Water Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
4-Nitroaniline	0	2	0%	48 - 48			--	--
4-Nitrophenol	0	2	0%	48 - 48			--	--
Bis(2-Chloroethoxy) Methane	0	2	0%	9.6 - 9.6			--	--
Bis(2-Chloroethyl) Ether	0	2	0%	9.6 - 9.6			--	--
Bis(2-Ethylhexyl) Phthalate	0	2	0%	9.6 - 9.6			--	--
Butylbenzylphthalate	0	2	0%	9.6 - 9.6			--	--
Carbazone	0	2	0%	48 - 48			--	--
Dibenzofuran	0	2	0%	9.6 - 9.6			--	--
Diethylphthalate	0	2	0%	9.6 - 9.6			--	--
Dimethylphthalate	0	2	0%	9.6 - 9.6			--	--
Di-N-Butylphthalate	0	2	0%	9.6 - 9.6			--	--
Di-N-Octylphthalate	0	2	0%	9.6 - 9.6			--	--
Hexachlorbenzene	0	2	0%	0.96 - 0.96			--	--
Hexachlorobutadiene	0	2	0%	9.6 - 9.6			--	--
Hexachlorocyclopentadiene	0	2	0%	48 - 48			--	--
Hexachloroethane	0	2	0%	9.6 - 9.6			--	--
Isophorone	0	2	0%	9.6 - 9.6			--	--
Nitrobenzene	0	2	0%	4.8 - 4.8			--	--
N-Nitrosodi-N-Propylamine	0	2	0%	9.6 - 9.6			--	--
N-Nitroso-Diphenylamine	0	2	0%	9.6 - 9.6			--	--
Pentachlorophenol	0	2	0%	12 - 12			15	No
Phenol	0	2	0%	9.6 - 9.6			--	--
2-Methylnaphthalene	0	2	0%	0.48 - 0.48			--	--
Acenaphthene	0	2	0%	0.48 - 0.48			--	--
Acenaphthylene	0	2	0%	0.48 - 0.48			--	--
Anthracene	0	2	0%	0.48 - 0.48			--	--
Benzo(a)Anthracene	0	2	0%	0.48 - 0.48			--	--
Benzo(a)pyrene	0	2	0%	0.19 - 0.19			--	--
Benzo(b)Fluoranthene	0	2	0%	0.48 - 0.48			--	--
Benzo(g,h,I)Perylene	0	2	0%	0.48 - 0.48			--	--
Benzo(k)Fluoranthene	0	2	0%	0.48 - 0.48			--	--
Chrysene	0	2	0%	0.48 - 0.48			--	--

Appendix L1-3. Comparison of Minimum Reporting Limit Range in Surface Water to Ecological Screening Values for the Protection of Aquatic Life

Compound	No. of Detected Samples	Total No. of Samples	% Detected Samples	Minimum Reporting Limit Range	Minimum Detected	Maximum Detected	NRWQC Surface Water Benchmark (1)	Is Highest Value of Min Reporting Limit Range>ORNL Soil Benchmark?
Dibenz(a,h)Anthracene	0	2	0%	0.48 - 0.48			--	--
Fluoranthene	0	2	0%	0.48 - 0.48			--	--
Fluorene	0	2	0%	0.48 - 0.48			--	--
Indeno(1,2,3-c,d)Pyrene	0	2	0%	0.48 - 0.48			--	--
Naphthalene	0	2	0%	0.48 - 0.48			--	--
Phenanthrene	0	2	0%	0.48 - 0.48			--	--
Pyrene	0	2	0%	0.48 - 0.48			--	--

NOTES:

NRWQC = National Recommended Water Quality Criteria (EPA, 2002)

-- Screening value not available

ug/L = micrograms per liter

ug/L = micrograms per liter

(1) Freshwater chronic criterion for aluminum, 87 ug/L, is used. It is based on pH=6.5-9 in groundwater. EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 ug/L of aluminum, when either total recoverable or dissolved is measured (EPA, 1998b).

(2) NRWQC value for chromium VI used.

Appendix L2

Name: Ornate Shrew (*Sorex ornatus*)

Taxonomy: *Sorex ornatus* is a rare species of shrew located only in coastal marshes and riparian communities of California and Baja California. Nine subspecies have been described, two of which were widely distributed in past history while seven others were found in small patches along coastal marshes, inland valleys, and montane meadows (Maldonado et al. 2001). Differentiation of Ornate Shrews into subspecies is largely based on body size and pelage coloration of a small number of specimens, and while this species shows a large degree of variation in size and pelage color, and many exhibit different degrees of melanism, genetic differences between the subspecies are few. Therefore, "splitting" the species into subspecies based on these phenotypic variations may not be reliable (Maldonado et al. 2001).

Most of the available information on the Ornate Shrew pertains to two subspecies. The Suisun Shrew (*Sorex ornatus sinuosus*) is a Federal Species of Concern and a California Species of Special Concern. This subspecies is now restricted to remnants of natural tidal and brackish marshes along the northern borders of San Pablo and Suisun bays in California (WESCO 1986). The Buena Vista Lake Shrew (*Sorex ornatus relictus*) is one of two subspecies of the Ornate Shrew that occur in the San Joaquin Valley, and has been listed as an Endangered Species by the U.S. Fish and Wildlife Service (DOI 2002). The species profile that follows is therefore comprised of information taken from separate sources pertaining to different subspecies.

Size: Ornate Shrews range in length from 9.8 to 10.5 cm. Their body weights range from 4.1 to 7.6 grams, with a mean weight of 5.85 grams (Brown et al. 1996). In most shrews, winter weight is 70% of their first-year weight, and 50% of their second-year weight (Hays, 1990).

Foraging Area: Data regarding the foraging area or territory size of the Ornate Shrew are unavailable. The short-tailed shrew has an approximate foraging area of 0.22 ha (Platt 1976).

Density: A favorable habitat should support densities of 111 individual shrews per hectare, according to estimations by Newman (1970). Suisun shrews exist in aggregations that consist of one dominant male and several females. In between the aggregations are young and/or subdominant males that were dispersed from the groups (Hays 1990).

Habitat: Ornate Shrews prefer mesophytic communities with dense cover and an abundant litter layer. Typical plants found in these communities are Fremont cottonwood, willows, alkali heath, wild rye grass, and Baltic rush (Brown et al. 1996). Suisun Shrews tend to inhabit tidal marshes that can be characterized in order of their decreasing tolerance to inundation: *Spartina foliosa* (cordgrass), *Salicornia ambigua, Salicornia virginica* (pickleweed), and *Grindelia cuneifolia* and *humulis* (gumplant), and brackish marshes dominated by *Scirpus californicus* (California bulrush) and *Typha latifolia* (cattail) (Rudd 1955).

Ornate Shrews build dome-shaped nests made of dead plant material and paper scraps, usually on top of the soil surface below driftwood or planks situated above the high tide line (WESCO, 1986).

Ornate Shrews are active day and night but are rarely observed due to their small size and cryptic behavior. They do not hibernate, but can enter a daily state of inactivity (called torpor) to survive extreme environmental conditions (DOI 2002).

Reproduction: Breeding typically occurs February through early October (Brown et al. 1996) and peaks in May (Newman and Rudd 1978). Litter size ranges from 4 to 7 young, with a mean of 5.2. Gestation typically lasts 21 days (Cal/Ecotox 2000). After breeding occurs, each aggregation is left with one dominant male and several breeding and immature females. Young, subdominant males leave the aggregations but do return in early spring to compete with resident males during the next breeding season (Hays 1990). The longevity of Ornate Shrews is only 16 – 18 months (Cal/Ecotox 2000) and deaths tend to occur shortly after the breeding season (Rudd 1955).

Feeding: Ornate Shrews will feed indiscriminately on available larvae and adults of several species of aquatic and terrestrial insects, and are also known to consume spiders, centipedes, slugs, snails, and earthworms on a seasonally available basis (DOI 2002). They have a very high body metabolism and are therefore able to eat between 60 and 200% of their body mass daily, and lactating females can eat up to 300% of their body mass (Genoud and Vogel 1989). For the short-tailed shrew, the standard metabolic rate is approximately 190% the rate predicted from body weight (Deavers and Hudson 1981). This risk assessment will reference the latter data in calculating feeding rates as 190% times the feeding rates derived using the allometric equation for mammal food intake from USEPA 1993.

Predators: Shrews are seldom preyed upon, possibly because they tend to stay deeply under vegetation (Pearson 1946, Crowcroft 1957) or because they are unpalatable due to the distasteful secretions and offensive odor from their flank glands and feces (DOI 2002).

Exposure Factors:

Feeding Rate: Mean: 1.119 grams/day (DW) Max: 1.317 grams/day (DW) (derived using Nagy, 2001 allometric equation for mammal food intake) (Deavers and Hudson 1981; Nagy 2001).

Drinking Rate: Mean: 0.001 L/day; Max: 0.0012 L/day (derived using allometric equation for drinking water from USEPA 1993).

Diet Partitioning Factor:

Soil:	0.02 (Derived from Beyer et al. 1994)
Plants:	0.00
Animals:	0.98 (Derived from DOI 2002)

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Name: Deer Mouse (*Peromyscus maniculatus*)

Size: Deer mice range from 7.1 to 10.2 cm in length, with a 5.1 to 13 cm tail (Burt and Grossenheider 1980). Schlesinger and Potter (1974) reported a mean weight of 22 grams for adult females and 20 grams for adult males. Minimum, mean, and maximum weights of 18.3, 19.6, and 20.9 grams, respectively, were derived from Schlesinger and Potter's data and will be used in this risk assessment.

Foraging Area: The deer mouse nests in burrows in the ground, in trees, stumps, and buildings. Bowers and Smith (1979) report mean home ranges of 0.128 and 0.094 ha for male and female deer mice, respectively, for the Idaho high desert. This is most similar to site habitat, so as a conservative exposure estimate, a foraging area of 0.1 ha is assumed for the purposes of this assessment.

Density: Population densities vary over space and time and are often positively correlated with food abundance (Taitt 1981; Wolff 1989), moisture contents of plants (Bowers and Smith 1979), and vegetative cover (van Horne 1982). Population density can range from 3.9 to 28 per hectare (Metzgar 1979).

Habitat: The deer mouse inhabit nearly all types of dry-land habitats within their range: short- grass prairies, grass-sage communities, coastal sage scrub, sand dunes, wet prairies, upland mixed and cedar forests, deciduous forests, ponderosa pine forests, other habitats (Holbrook 1979; Kaufman and Kaufman 1989; Ribble and Samson 1987; Wolff and Hurlbutt 1982).

Reproduction: The breeding season of the deer mouse is normally from February to November; the duration of reproductive season varies with latitude (Burt and Grossenheider 1980). The deer mouse produces 2 to 4 litters per year; 3 to 5 pups per litter (Burt and Grossenheider 1980). In Alberta, Canada, deer mice reach sexual maturity 35 days after birth (Millar 1985).

Feeding: Deer mice eat seeds, arthropods, some green vegetation, roots, fruits, and fungi as available (Johnson 1961; Menhusen 1963; Whitaker 1966).

Predators: House cat, hawks, fox, coyote, and snakes.

Exposure Factors:

Feeding Rate: Mean is 3.322 grams/day dry weight and maximum is 3.491 grams (derived using allometric equation for rodent food ingestion, Nagy 2001).

Drinking Rate: Mean is 0.003 L/day (derived using allometric equation for drinking water, USEPA 1993).

Diet Partitioning Factor:

Soil:	0.02 (Derived from Beyer et al. 1994)
Plants:	0.49 (Derived from USEPA 1993)
Animals:	0.49 (Derived from USEPA 1993)

References:

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Name: Long-tailed Weasel (*Mustela frenata*)

Size: Males of this species tend to be somewhat larger than females, with head and body lengths of 22.8 – 26.6 cm (males) and 20.3 – 22.8 cm (females) (Burt and Grossenheider 1976). Tails of both sexes are about 50% of their total body length (Baker 1983). Given the range of adult weasel weights is 80 to 450 grams (Baker, 1983) we might assume that a mean weight for risk assessment purposes is 265 grams.

Foraging Area: The home range for the long-tailed weasel is 12 to 16 ha (Burt and Grossenheider 1976). As a conservative exposure estimate, a foraging area of 12 ha is assumed for the purposes of this assessment.

Density: The density of weasel populations is estimated at 15 to 20 per 259 ha (Burt and Grossenheider 1976).

Habitat: Weasels are found in temperate and tropical habitats in North and Central America. They inhabit crop fields and small wooded areas and will burrow and nest in hollow logs, rock piles, and under barns. Weasels sometimes take over the burrow of one of their prey (Baker 1983).

Reproduction: The long-tailed weasel mates in July or August. Four to eight young are born in late April or early May after a gestation period of 2.5 to 337 days. Their eyes open at 35 days. Males reach sexual maturity at one year, while females are capable of reproducing at 3 – 4 months (Baker 1983).

Feeding: Weasels are strictly carnivorous but may ingest some soil while feeding. They prey on mammals up to rabbit size, and also take a few birds and other animals by piercing the prey's skull with its canines and killing it (Burt and Grossenheider 1976).

Predators: Man

Exposure Factors:

Feeding Rate: Mean: 16.06 grams (DW) /day; Max: 24.97 grams (DW)/ day (derived using allometric equation for food ingestion for all mammals, Nagy 2001).

Drinking Rate: Mean: 0.030 L/day; Max: 0.048 L/day (derived using allometric equation for drinking water, USEPA 1993).

Diet Partitioning Factor:

Soil:	0.028 Beyer et al. 1994; Knable 1974
Plants:	0.000
Animals:	0.972 (Derived from Burt and Grossenheider 1976)

References:

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Name: Mourning Dove (*Zenaida macroura*)

Size: The average size of a mourning dove is 30.5 cm; its weight ranges from 115-140 grams with a mean weight of 119 grams (Dunning 1993).

Foraging Area: A search for the foraging area of the Mourning dove was unsuccessful. A calculation involving the relationship of daily food consumption to body weight for the Mourning dove was used to estimate a foraging area of 0.53 (ha) (Schoener 1966). The herbivore relationship was assumed to best apply to the Mourning dove because seeds and vegetable matter comprises over 90 percent of its diet.

Density: Population densities range from 1 to 5 per 2.02 ha in California (Garber 1955).

Habitat: Mourning doves can be found in the desert (near water) to open woodland, agricultural areas with scattered trees, and suburbs. They will nest in the fork of a horizontal tree branch, on ground, on deserted nest of other species, or anywhere else providing solid support (Ehrlich et al. 1988).

Reproduction: Mourning doves generally nest between mid-March and mid-September and produce 2-3, but occasionally 3-6 clutches per year (Ehrlich et al. 1988). Mourning doves almost always lay two eggs (Brown 1989; Verner 1980); gestation period is approximately 15 days (Ehrlich et al. 1988).

Feeding: Since the mourning dove's diet consists of seeds, including waste grain from cultivated fields (Ehrlich et al. 1988), incidental ingestion of soil will occur. Since the Mourning dove feeds on the ground, it is assumed that at least a minimal amount of incidental soil ingestion occurs and incidental soil ingestion is set at 2 percent for the exposure model.

Predators: Humans, hawks, owls, cats, dogs, blue jays, and squirrels (Assoc. of Game and Fish 1957).

Exposure Factors:

Feeding Rate: Mean is 12.5 grams (ww)/day, range is 1 to 17 g/day (J. Wildl. Manage. 1988). Mean is 16.48 grams (dw)/day with a maximum of 18.41 grams (dw)/day (derived using allometric equation for food ingestion for all mammals, Nagy 2001).

Drinking Rate: Mean is .014 L/day (derived using allometric equation for drinking water, USEPA 1993).

Diet Partitioning Factor

Soil:	0.02 (Derived from Beyer et al. 1994)
Plants:	0.98 (Derived from Ehrlich et al. 1988)
Animal:	0.00 (Derived from Ehrlich et al. 1988)

References:

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Name: Western Meadowlark (*Sturnella neglecta)*

Size: The western meadowlark measures about 28 cm long with a 13 cm tail, thick stout body, large legs, and a long, straight bill (Dunn 1998). The minimum and maximum weight of the adult western meadowlark has been reported as 74.1 and 114 grams, respectively (Lanyon 1962). From those data a mean weight of approximately 94.05 grams can be derived. A unique foot structure allows the meadowlark to walk about on the ground, instead of hopping like other birds.

Foraging Area: The foraging area of the western meadowlark is approximately 3.0 ha (Schoener 1968).

Density: The density of western meadowlarks ranges from 0.1-1.0 birds/acre (Bryant 1914).

Habitat: The western meadowlark habitats include meadows, plains and prairies.

Reproduction: In California, the western meadowlark nests between March and August (Bryant 1914). The female builds a nest on the ground, hidden in a clump of grass and domed with grass and weed fibers. A small hole on the side, and a hidden runway up to four feet long, allows the meadowlark an entrance to the nest. The female lays one whitish pink egg, speckled with lavender and brown, each day for five days. The female incubates for 14 days and only leaves the nest for brief periods, while the male searches for food (Dunn 1998).

Feeding: The western meadowlark feeding habits are marked by seasonal differences in their main staples. They eat grain during winter and early spring, insects late spring and summer, and weed seeds in fall. (Lanyon 1994). It is a powerful flyer that eats insects, making it an asset to landowners (Dunn 1998).

Predators: Cats, dogs, hawks, owls, foxes and skunks.

Exposure Factors:

Feeding Rate: Mean: 14.04 grams/day (DW); Min: 16.00 grams/day (DW); Max: 22.3 grams/day (derived using passerine allometric equation, Nagy 2001).

Drinking Rate: 12 ml/day (derived using passerine allometric equation EPA 1993).

Diet Partitioning Factor:

Soil:	0.02 (derived from Beyer et al. 1994)
Plant:	0.36 (derived from Lanyon 1994)
Invertebrate:	0.62 (derived from Lanyon 1994)

References:

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Name: Spotted Towhee (*Pipilo maculatus*)

Size: Spotted Towhee range in length from 18 to 20 cm. Their body weights range from 32.1 to 52.3 grams, with a mean weight of 40.5 grams (Clench and Leberman 1978).

Foraging Area: Foraging area (provided in literature as home range) is probably variable, depending upon specific locality and season. Areas range from 3.8 to 12.5 hectares (Barbour 1941). As a conservative exposure estimate, a foraging area of 3.8 ha is assumed for the purposes of this assessment.

Density: Spotted Towhee densities have been reported as high as 108 per 40 hectares, which was in a California chaparral (Yeaton 1974).

Habitat: The Spotted Towhee ranges principally in the western United States and southern Canada southward through Mexico and into Central America. In general, it inhabits mountain manzanita thickets, scrub oaks, and pinyon-juniper woods with dense understory (Cornell Lab of Ornithology 1999). In California, the Spotted Towhee can be found in chaparrals and other shrub habitats and in open stands of riparian, hardwood, hardwood-conifer, and lower-elevation conifer habitats (Dobkin 2003).

Reproduction: Nests are usually constructed in a depression on the ground with grasses, bark shreds, rootlets, and dead leaves and have a lining made of fine grasses and hairs. Occasionally, nests are built in slash piles, dense shrubs, or a vine tangle up to 1.8 meters above ground (Harrison 1978).

Breeding takes place in late April through August and peaks in May and June. Spotted Towhees are monogamous, solitary breeders with clutches of 2 to 6 eggs, averaging 3 to 4. Two broods are possible each breeding season. The females incubate the eggs for 12 to 14 days, and during 8 – 11 days of fledging, the young are tended to by both parents (Baumann 1959; Davis 1960; Harrison 1978).

Feeding: During the spring and summer, the Spotted Towhee's diet consists of approximately 50% insects, with the remainder including seeds, other invertebrates, berries, and acorns (Martin et al., 1961). It forages by scratching and gleaning in litter and foliage, sometimes by plucking seeds and fruits from plants, and on rare occasions flycatching (Davis 1957).

Predators: Spotted Towhees may be preyed upon by prairie falcons (Bond 1939), or by scrub jays, king snakes, and California ground squirrels (Davis 1960).

Exposure Factors:

Feeding Rate: Mean: 7.89 grams/day (DW) Max: 9.40 grams/day (DW) (derived using allometric equation for passerine birds food intake from Nagy 2001).

Drinking Rate: Mean: 0.0069 L/day (derived using allometric equation for drinking water from USEPA 1993).

Diet Partitioning Factor:

Soil:	0.02 (Derived from Beyer et al. 1994)
Plants:	0.24 (Derived from Martin et al. 1961)
Animal:	0.74 (Derived from Martin et al. 1961)

References:

Barbour, R.W. 1941. Winter habits of the red-eyed towhee in eastern Kentucky. Am. Midl. Nat. 26:593-595.

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Name: Red-shouldered Hawk (*Buteo lineatus*)

Size: The minimum weight of the Red-shouldered Hawk is 398 g, the mean weight is 559 g, and the maximum weight is 720 g (Hartman 1961). The adults are 41 cm in length and have a 102 cm wingspan (Robbins et al. 1966).

Foraging Area: The foraging area for the Red-shouldered Hawk (given as the maximum breeding home range for females in a California study) is 36.8 ha (McCrary 1982).

Density: Red-shouldered Hawk densities have been reported as high as 3.6 birds per square kilometer (derived from Jacobs and Jacobs 2002).

Habitat: The typical habitat for the Red-shouldered Hawk includes dense riparian deciduous cover bordered by foraging areas (edges, swamps, marshes, and wet meadows). In the western Sierra Nevada foothills, it can be found foraging in successional stages of valley foothill hardwood and valley foothill hardwood-conifer habitats (Polite 2003).

Reproduction: *(following is paraphrased from Cornel, 2003):* Courtship behavior includes very vocal aerial displays of "high-circling" and "sky-dancing" which is followed by copulation while standing. Red-shouldered hawks nest below the forest canopy, typically 9 – 20 m above ground (1.5 – 35 m range) in lower main branches of trees. Nests are built of live or dead sticks, dried leaves, bark, Spanish Moss, and lichens. Eggs (usually 2 – 4) are laid between January and June, but mostly during March through April. Both sexes incubate eggs and the male feeds the female during this period. Eggs hatch in approximately 33 days and is followed by 5 to 6 weeks of fledging. Parents continue to supply food to their young for 8 to 10 weeks after fledging (Cornell 2003).

Feeding: The Red-shouldered Hawk searches for prey from its perches on trees, snags, and posts. It primarily feeds on small mammals, snakes, lizards, amphibians, small or young birds, and large insects (Polite 2003). On rare occasions, it will feed on such items as carrion or (regionally) crayfish (Cornell 2003).

Predators: Nests of the Red-shouldered Hawk are sometimes raided by great horned owls and raccoons (Cooper 1999).

Exposure Factors:

Feeding Rate: Mean: 34.8 grams/day (DW) Max: 42.1 grams/day (DW) (derived using allometric equation for all birds food intake from USEPA 1993).

Drinking Rate: Mean: 0.04 L/day (derived using allometric equation for drinking water from USEPA 1993).

Diet Partitioning Factor:

Soil:	0.02 (Derived from Beyer et al. 1994)
Plants:	0.00 (Derived from Polite 2003)
Animal:	0.98 (Derived from Polite 2003)

References:

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Appendix L3

Appendix L3-1. Chemical-Specific Exposure Factors - Tier 1 Soil Pathways

	Chemical	Tier 1, Step 2 BCFp	Tier 1, Step 2 BCFp Abbreviated Reference	Tier 1, Step 2BCFi	Tier 1, Step 2 BCFi Abbreviated Reference
Dioxins					
	2,3,7,8-TCDD TEQ	6.89E-02	EPA, 2003	4.71E+00	Sample et al., 1998
Inorganic					
	Aluminum	1.80E-04	Strenge and Peterson, 1989	3.40E-01	Beyer and Stafford, 1993
	Antimony	1.10E-02	Napier et al., 1980	9.90E-01	Mean of 12 Metals
	Arsenic	6.99E-02	Bechtel Jacobs Co. LLC, 1998	1.54E-01	Sample et al., 1998
	Barium	5.00E-03	Strenge and Peterson, 1989	3.60E-01	Beyer and Stafford, 1993
	Beryllium	4.70E-04	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals
	Cadmium	6.21E-01	Bechtel Jacobs Co. LLC, 1998	8.28E+00	Sample et al., 1998
	Chromium	2.50E-04	Strenge and Peterson, 1989	6.29E-01	Sample et al., 1998
	Cobalt	9.40E-03	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals
	Copper	4.62E-01	Bechtel Jacobs Co. LLC, 1998	9.26E-01	Sample et al., 1998
	Lead	7.01E-02	Bechtel Jacobs Co. LLC, 1998	4.48E-01	Sample et al., 1998
	Manganese	3.00E-02	Strenge and Peterson, 1989	7.35E-02	Sample et al., 1998
	Mercury	1.25E+00	Bechtel Jacobs Co. LLC, 1998	5.33E+00	Sample et al., 1998
	Nickel	5.59E-02	Bechtel Jacobs Co. LLC, 1998	1.46E+00	Sample et al., 1998
	Selenium	5.13E-01	Bechtel Jacobs Co. LLC, 1998	1.32E+00	Sample et al., 1998
	Silver	1.50E-01	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals

Appendix L3-1. Chemical-Specific Exposure Factors - Tier 1 Soil Pathways

	Chemical	Tier 1, Step 2 BCFp	Tier 1, Step 2 BCFp Abbreviated Reference	Tier 1, Step 2BCFi	Tier 1, Step 2 BCFi Abbreviated Reference
	Vanadium	1.30E-03	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals
	Zinc	7.99E-01	Bechtel Jacobs Co. LLC, 1998	5.65E+00	Sample et al., 1998
Misc. Organic					
	Methylene chloride	6.74E+00	EPA, 2003	1.00E+00	Default
PAH Group 1					
	Anthracene	3.62E-01	EPA, 2003	3.20E-01	Beyer and Stafford, 1993
	Benzo(g,h,i)perylene	5.38E-02	EPA, 2003	1.50E-01	Beyer and Stafford, 1993
	Fluoranthene	2.18E-01	EPA, 2003	3.70E-01	Beyer and Stafford, 1993
	Phenanthrene	3.62E-01	EPA, 2003	2.80E-01	Beyer and Stafford, 1993
	Pyrene	2.20E-01	EPA, 2003	3.90E-01	Beyer and Stafford, 1993
PAH Group 2					
	Benzo(a)anthracene	1.30E-01	EPA, 2003	2.70E-01	Beyer and Stafford, 1993
	Benzo(a)pyrene	9.07E-02	EPA, 2003	3.40E-01	Beyer and Stafford, 1993
	Benzo(b)fluoranthene	8.38E-02	EPA, 2003	2.10E-01	Beyer and Stafford, 1993
	Benzo(k)fluoranthene	8.38E-02	EPA, 2003	2.10E-01	Beyer and Stafford, 1993
	Chrysene	1.30E-01	EPA, 2003	4.40E-01	Beyer and Stafford, 1993
	Dibenz(a,h)anthracene	5.42E-02	EPA, 2003	4.90E-01	Beyer and Stafford, 1993
	Indeno(1,2,3-cd)pyrene	5.62E-02	EPA, 2003	4.10E-01	Beyer and Stafford, 1993

Appendix L3-1. Chemical-Specific Exposure Factors - Tier 1 Soil Pathways

Chemical	Tier 1, Step 2 BCFp	Tier 1, Step 2 BCFp Abbreviated Reference	Tier 1, Step 2BCFi	Tier 1, Step 2 BCFi Abbreviated Reference
Phthalate Esters				
Bis (2-ethylhexyl) phthalate	3.16E-02	EPA, 2003	1.00E+00	Default
Diethylphthalate	2.23E+00	EPA, 2003	1.00E+00	Default
Semivolatile Organic Compound				
Hexachlorobenzene	1.10E-01	EPA, 2003	1.69E+00	Beyer, 1996
Phenol	2.04E+01	EPA, 2003	1.00E+00	Default
Volatile Organic Compound				
Acetone	2.53E+01	EPA, 2003	1.00E+00	Default

Appendix L3-2. Chemical-Specific Exposure Factors - Tier 1 Sediment Pathways

Chemical	Tier 1, Step 2 BCFp	Tier 1, Step 2 BCFp Abbreviated Reference	Tier 1, Step 2 BCFi	Tier 1, Step 2 BCFi Abbreviated Reference
Inorganic				
Aluminum	1.80E-04	Strenge and Peterson, 1989	3.40E-01	Beyer and Stafford, 1993
Arsenic	1.06E-01	Bechtel Jacobs Co. LLC, 1998	2.03E-01	Sample et al., 1998
Barium	5.00E-03	Strenge and Peterson, 1989	3.60E-01	Beyer and Stafford, 1993
Cadmium	1.15E+00	Bechtel Jacobs Co. LLC, 1998	1.09E+01	Sample et al., 1998
Chromium	2.50E-04	Strenge and Peterson, 1989	2.46E+00	Sample et al., 1998
Cobalt	9.40E-03	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals
Copper	1.12E+00	Bechtel Jacobs Co. LLC, 1998	2.72E+00	Sample et al., 1998
Lead	2.00E-01	Bechtel Jacobs Co. LLC, 1998	7.10E-01	Sample et al., 1998
Manganese	3.00E-02	Strenge and Peterson, 1989	9.47E-02	Sample et al., 1998
Mercury	3.81E+00	Bechtel Jacobs Co. LLC, 1998	4.60E+01	Sample et al., 1998
Nickel	8.35E-02	Bechtel Jacobs Co. LLC, 1998	1.08E+01	Sample et al., 1998
Selenium	4.22E-01	Bechtel Jacobs Co. LLC, 1998	5.31E+00	Sample et al., 1998
Vanadium	1.30E-03	Strenge and Peterson, 1989	9.90E-01	Mean of 12 metals
Zinc	1.52E+00	Bechtel Jacobs Co. LLC, 1998	1.49E+01	Sample et al., 1998

Appendix L4

Table L4-1. Toxicity Reference Values for Ornate Shrew

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Dioxins											
2,3,7,8-TCDD TEQ	2,3,7,8-TCDD	Rat	NOAEL	0.000001	Reproduction	Murray et al., 1979	1	1	1	1.28E+00	1.28E-06
Inorganic											
Aluminum	Aluminum	Mouse	LOAEL	19.3	Reproduction	Ondreicka et al., 1966	1	1	10	1.10E+00	2.13E+00
Antimony	Antimony	Various Mammals	NOAEL	0.06	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	6.00E-02
Arsenic	Arsenic	Rat	NOAEL	0.32	Growth rate, survival, blood pressure, and tumor effects	Schroeder et al, 1968	1	1	1	1.28E+00	4.09E-01
Barium	Barium	Various mammals	NOAEL	48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E+01
Beryllium	Beryllium	Various Mammals	NOAEL	0.48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E-01
Cadmium	Cadmium	Various Mammals	NOAEL	0.55	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.50E-01
Chromium	Chromium	Rat	NOAEL	2737	Reproduction and longevity	Ivankovic and Preussmann, 1975	1	1	1	1.28E+00	3.50E+03
Cobalt	Cobalt	Various Mammals	NOAEL	7.3	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	7.30E+00
Copper	Copper	Mouse	NOAEL	2.67	several effects were reported from immune response experiments at doses below the no effect dose of 26.67 mg/kg-day.	Pocino and others, 1991	1	1	1	1.10E+00	2.95E+00
Lead	Lead	Various Mammals	NOAEL	5.8	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.80E+00
Manganese	Manganese	Mouse	NOAEL	13.7	Decrease in paired testes weight, seminal vesicle weight, and preputial gland weight	Gray and Laskey, 1980	1	1	1	1.10E+00	1.51E+01
Mercury	Mercury	Rat	NOAEL	0.25	No adverse reproductive or developmental effects in rats exposed to methylmercury for 122 days	Khera and Tabacova, 1973	1	1	1	1.28E+00	3.20E-01

Table L4-1. Toxicity Reference Values for Ornate Shrew

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Nickel	Nickel	Rat	NOAEL	0.133	Increase in number of pups born dead or dying shortly after birth during G2	Smith et al., 1993	1	1	1	1.25E+00	1.67E-01
Selenium	Selenium	Mouse	NOAEL	0.05	No hepatic lesions	Harr et al., 1966	1	1	1	1.09E+00	5.46E-02
Silver	Silver	Rat	LOAEL	89	Ventricular hypertrophy	Olcott, 1950	1	1	10	1.28E+00	1.14E+01
Vanadium	Vanadium	Rat	NOAEL	0.89	Growth and survival	Stockinger et al., 1953	1	1	1	1.28E+00	1.14E+00
Zinc	Zinc	Mouse	NOAEL	9.6	Cellular changes in pancreas and adrenal cortax	Aughey et al., 1977	1	1	1	1.09E+00	1.05E+01
Misc. Organic											
Methylene chloride	Methylene chloride	Rat	NOAEL	1200	Hepatic Effects	Kirschman et al.1986	1	1	1	1.23E+00	1.47E+03
PAH Group 1											
Anthracene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.26E+00	6.30E+01
Benzo(g,h,i)perylene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.26E+00	6.30E+01
Fluoranthene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.26E+00	6.30E+01
Phenanthrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.26E+00	6.30E+01
Pyrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.26E+00	6.30E+01
PAH Group 2											
Benzo(a)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Benzo(a)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Benzo(b)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Benzo(k)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00

Table L4-1. Toxicity Reference Values for Ornate Shrew

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Chrysene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Dibenz(a,h)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.10E+00	1.45E+00
Phthalate Esters											
Bis (2-ethylhexyl) phthalate	Bis (2-ethylhexyl) phthalate	Rat	LOAEL	200	Slowed growth; no effect on mortality, life expectancy, or reproduction	Carpenter et al., 1953	1	1	10	1.28E+00	2.56E+01
Diethylphthalate	Diethylphthalate	Mouse	NOAEL	4583	Testicular and accessory gland weight	Lamb et al., 1987.	1	1	1	1.10E+00	5.06E+03
Semivolatile Organic Compound											
Hexachlorobenzene	Hexachlorobenzene	Rat	NOAEL	2	Growth, feed consumption, hematological parametners, survival, viability index	Arnold et al., 1985	1	1	1	1.28E+00	2.56E+00
Phenol	Phenol	Rat	NOAEL	721	Liver abnormalitites	NCI, 1980	1	1	1	1.28E+00	9.22E+02
Volatile Organic Compound											
Acetone	Acetone	Rat	NOAEL	100	Liver and Kidney damage	EPA, 1986	10	1	1	1.28E+00	1.28E+01

Empty cells indicate that no toxicity data were available for the COPEC or a suitable surrogate.

Table L4-2. Toxicity Reference Values for Deer Mouse

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Dioxins											
2,3,7,8-TCDD TEQ	2,3,7,8-TCDD	Rat	NOAEL	0.000001	Reproduction	Murray et al., 1979	1	1	1	1.19E+00	1.19E-06
Inorganic											
Aluminum	Aluminum	Mouse	LOAEL	19.3	Reproduction	Ondreicka et al., 1966	1	1	10	1.03E+00	1.98E+00
Antimony	Antimony	Various Mammals	NOAEL	0.06	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	6.00E-02
Arsenic	Arsenic	Rat	NOAEL	0.32	Growth rate, survival, blood pressure, and tumor effects	Schroeder et al, 1968	1	1	1	1.19E+00	3.80E-01
Barium	Barium	Various mammals	NOAEL	48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E+01
Beryllium	Beryllium	Various Mammals	NOAEL	0.48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E-01
Cadmium	Cadmium	Various Mammals	NOAEL	0.55	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.50E-01
Chromium	Chromium	Rat	NOAEL	2737	Reproduction and longevity	Ivankovic and Preussmann, 1975	1	1	1	1.19E+00	3.25E+03
Cobalt	Cobalt	Various Mammals	NOAEL	7.3	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	7.30E+00
Copper	Copper	Mouse	NOAEL	2.67	several effects were reported from immune response experiments at doses below the no effect dose of 26.67 mg/kg-day.	Pocino and others, 1991	1	1	1	1.03E+00	2.74E+00
Lead	Lead	Various Mammals	NOAEL	5.8	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.80E+00
Manganese	Manganese	Mouse	NOAEL	13.7	Decrease in paired testes weight, seminal vesicle weight, and preputial gland weight	Gray and Laskey, 1980	1	1	1	1.03E+00	1.41E+01
Mercury	Mercury	Rat	NOAEL	0.25	No adverse reproductive or developmental effects in rats exposed to methylmercury for 122 days	Khera and Tabacova, 1973	1	1	1	1.19E+00	2.97E-01

Table L4-2. Toxicity Reference Values for Deer Mouse

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Nickel	Nickel	Rat	NOAEL	0.133	Increase in number of pups born dead or dying shortly after birth during G2	Smith et al., 1993	1	1	1	1.16E+00	1.55E-01
Selenium	Selenium	Mouse	NOAEL	0.05	No hepatic lesions	Harr et al., 1966	1	1	1	1.01E+00	5.07E-02
Silver	Silver	Rat	LOAEL	89	Ventricular hypertrophy	Olcott, 1950	1	1	10	1.19E+00	1.06E+01
Vanadium	Vanadium	Rat	NOAEL	0.89	Growth and survival	Stockinger et al., 1953	1	1	1	1.19E+00	1.06E+00
Zinc	Zinc	Mouse	NOAEL	9.6	Cellular changes in pancreas and adrenal cortax	Aughey et al., 1977	1	1	1	1.02E+00	9.76E+00
Misc. Organic											
Methylene chloride	Methylene chloride	Rat	NOAEL	1200	Hepatic Effects	Kirschman et al.1986	1	1	1	1.14E+00	1.37E+03
PAH Group 1											
Anthracene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.17E+00	5.86E+01
Benzo(g,h,i)perylene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.17E+00	5.86E+01
Fluoranthene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.17E+00	5.86E+01
Phenanthrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.17E+00	5.86E+01
Pyrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.17E+00	5.86E+01
PAH Group 2											
Benzo(a)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Benzo(a)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Benzo(b)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Benzo(k)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00

Table L4-2. Toxicity Reference Values for Deer Mouse

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Chrysene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Dibenz(a,h)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	1.03E+00	1.34E+00
Phthalate Esters											
Bis (2-ethylhexyl) phthalate	Bis (2-ethylhexyl) phthalate	Rat	LOAEL	200	Slowed growth; no effect on mortality, life expectancy, or reproduction	Carpenter et al., 1953	1	1	10	1.19E+00	2.38E+01
Diethylphthalate	Diethylphthalate	Mouse	NOAEL	4583	Testicular and accessory gland weight	Lamb et al., 1987.	1	1	1	1.03E+00	4.70E+03
Semivolatile Organic Compound											
Hexachlorobenzene	Hexachlorobenzene	Rat	NOAEL	2	Growth, feed consumption, hematological parametners, survival, viability index	Arnold et al., 1985	1	1	1	1.19E+00	2.38E+00
Phenol	Phenol	Rat	NOAEL	721	Liver abnormalitites	NCI, 1980	1	1	1	1.19E+00	8.57E+02
Volatile Organic Compound											
Acetone	Acetone	Rat	NOAEL	100	Liver and Kidney damage	EPA, 1986	10	1	1	1.19E+00	1.19E+01

Empty cells indicate that no toxicity data were available for the COPEC or a suitable surrogate.

Table L4-3. Toxicity Reference Values for Long-tailed Weasel

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Dioxins											
2,3,7,8-TCDD TEQ	2,3,7,8-TCDD	Rat	NOAEL	0.000001	Reproduction	Murray et al., 1979	1	1	1	1.02E+00	1.02E-06
Inorganic											
Aluminum	Aluminum	Mouse	LOAEL	19.3	Reproduction	Ondreicka et al., 1966	1	1	10	8.77E-01	1.69E+00
Antimony	Antimony	Various Mammals	NOAEL	0.06	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	6.00E-02
Arsenic	Arsenic	Rat	NOAEL	0.32	Growth rate, survival, blood pressure, and tumor effects	Schroeder et al, 1968	1	1	1	1.02E+00	3.25E-01
Barium	Barium	Various mammals	NOAEL	48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E+01
Beryllium	Beryllium	Various Mammals	NOAEL	0.48	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	4.80E-01
Cadmium	Cadmium	Various Mammals	NOAEL	0.55	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.50E-01
Chromium	Chromium	Rat	NOAEL	2737	Reproduction and longevity	Ivankovic and Preussmann, 1975	1	1	1	1.02E+00	2.78E+03
Cobalt	Cobalt	Various Mammals	NOAEL	7.3	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	7.30E+00
Copper	Copper	Mouse	NOAEL	2.67	several effects were reported from immune response experiments at doses below the no effect dose of 26.67 mg/kg-day.	Pocino and others, 1991	1	1	1	8.77E-01	2.34E+00
Lead	Lead	Various Mammals	NOAEL	5.8	Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	5.80E+00
Manganese	Manganese	Mouse	NOAEL	13.7	Decrease in paired testes weight, seminal vesicle weight, and preputial gland weight	Gray and Laskey, 1980	1	1	1	8.77E-01	1.20E+01
Mercury	Mercury	Rat	NOAEL	0.25	No adverse reproductive or developmental effects in rats exposed to methylmercury for 122 days	Khera and Tabacova, 1973	1	1	1	1.02E+00	2.54E-01

Table L4-3. Toxicity Reference Values for Long-tailed Weasel

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjust-ment	TRV (mg/kg-day)
Nickel	Nickel	Rat	NOAEL	0.133	Increase in number of pups born dead or dying shortly after birth during G2	Smith et al., 1993	1	1	1	9.96E-01	1.33E-01
Selenium	Selenium	Mouse	NOAEL	0.05	No hepatic lesions	Harr et al., 1966	1	1	1	8.68E-01	4.34E-02
Silver	Silver	Rat	LOAEL	89	Ventricular hypertrophy	Olcott, 1950	1	1	10	1.02E+00	9.05E+00
Vanadium	Vanadium	Rat	NOAEL	0.89	Growth and survival	Stockinger et al., 1953	1	1	1	1.02E+00	9.05E-01
Zinc	Zinc	Mouse	NOAEL	9.6	Cellular changes in pancreas and adrenal cortax	Aughey et al., 1977	1	1	1	8.70E-01	8.35E+00
Misc. Organic											
Methylene chloride	Methylene chloride	Rat	NOAEL	1200	Hepatic Effects	Kirschman et al.1986	1	1	1	9.75E-01	1.17E+03
PAH Group 1											
Anthracene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.00E+00	5.01E+01
Benzo(g,h,i)perylene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.00E+00	5.01E+01
Fluoranthene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.00E+00	5.01E+01
Phenanthrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.00E+00	5.01E+01
Pyrene	Naphthalene	Rat	NOAEL	50	Reproductive	Navarro et al., 1991	1	1	1	1.00E+00	5.01E+01
PAH Group 2											
Benzo(a)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Benzo(a)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Benzo(b)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Benzo(k)fluoranthene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00

Table L4-3. Toxicity Reference Values for Long-tailed Weasel

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Dosage (mg/kg-day)	Effect or Measurement Endpoint	Reference	Chemical Extrapolation	Taxonomic Extrapolation	Endpoint Extrapolation	Allometric Adjustment	TRV (mg/kg-day)
Chrysene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Dibenz(a,h)anthracene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene	Mouse	NOAEL	1.31	Life span and gastric neoplasms	Neal and Rigdon, 1967	1	1	1	8.77E-01	1.15E+00
Phthalate Esters											
Bis (2-ethylhexyl) phthalate	Bis (2-ethylhexyl) phthalate	Rat	LOAEL	200	Slowed growth; no effect on mortality, life expectancy, or reproduction	Carpenter et al., 1953	1	1	10	1.02E+00	2.03E+01
Diethylphthalate	Diethylphthalate	Mouse	NOAEL	4583	Testicular and accessory gland weight	Lamb et al., 1987.	1	1	1	8.77E-01	4.02E+03
Semivolatile Organic Compound											
Hexachlorobenzene	Hexachlorobenzene	Rat	NOAEL	2	Growth, feed consumption, hematological parametners, survival, viability index	Arnold et al., 1985	1	1	1	1.02E+00	2.03E+00
Phenol	Phenol	Rat	NOAEL	721	Liver abnormalitites	NCI, 1980	1	1	1	1.02E+00	7.33E+02
Volatile Organic Compound											
Acetone	Acetone	Rat	NOAEL	100	Liver and Kidney damage	EPA, 1986	10	1	1	1.02E+00	1.02E+01

Empty cells indicate that no toxicity data were available for the COPEC or a suitable surrogate.

Table L4-4. Toxicity Reference Values for Birds

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Concentration in Feed (mg/kg)	Dosage (mg/kg-day)		Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjustment	TRV (mg/kg-day)
Dioxins													
2,3,7,8-TCDD TEQ	2,3,7,8-TCDD	Ring-necked Pheasant	NOAEL	Not Available	1.43E-05		Reproduction	Nosek et al., 1992	1	1	1	1.00E+00	1.43E-05
Inorganic													
Aluminum	Aluminum	Ring Dove	NOAEL	Not Available	1.10E+02		Reproduction	Carriere et al., 1986	1	1	1	1.00E+00	1.10E+02
Antimony	Antimony	Various Mammals	NOAEL	Not Available	6.00E-02		Reproduction, growth, and survival	EPA, 2003	1	10	1	1.00E+00	6.00E-03
Arsenic	Arsenic	Mallard Duck	NOAEL	Not Available	5.50E+00		Liver, egg, and body weight	Stanley et al., 1994	1	1	1	1.00E+00	5.50E+00
Barium	Barium	Chicks	NOAEL	Not Available	2.08E+01		Mortality	Johnson et al., 1960	1	1	1	1.00E+00	2.08E+01
Beryllium	Beryllium	Various Mammals	NOAEL	Not Available	4.80E-01		Reproduction, growth, and survival	EPA, 2003	1	10	1	1.00E+00	4.80E-02
Cadmium	Cadmium	Various	NOAEL	Not Available	1.60E+00		Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	1.60E+00
Chromium	Chromium	Black Duck	NOAEL	Not Available	1.00E+00		Reproduction	Haseltine et al., 1985	1	1	1	1.00E+00	1.00E+00
Cobalt	Cobalt	Various	NOAEL	Not Available	7.60E+00		Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	7.60E+00
Copper	Copper	Chicks	NOAEL	Not Available	2.30E+00		No effect on weight gain	Norvell and others, 1974	1	1	1	1.00E+00	2.30E+00
Lead	Lead	Various	NOAEL	Not Available	1.60E+00		Reproduction, growth, and survival	EPA, 2003	1	1	1	1.00E+00	1.60E+00
Manganese	Manganese	Japanese Quail	NOAEL	Not Available	7.76E+01		Growth, aggressive behavior	Laskey and Edens, 1985	1	1	1	1.00E+00	7.76E+01
Mercury	Mercury	Mallard Duck	NOAEL	Not Available	3.90E-02		Reproduction	EPA-Great Lakes, Heinz 1974, 1975, 1976, 1979	1	1	1	1.00E+00	3.90E-02
Nickel	Nickel	Mallard Duckling	NOAEL	Not Available	1.38E+00		No effect on tremors and edema in toe and leg joints	Cain and Pafford, 1981	1	1	1	1.00E+00	1.38E+00
Selenium	Selenium	Mallard Duck	NOAEL	Not Available	2.30E-01		Food consumption, growth, mortality	Heinz et al., 1988	1	1	1	1.00E+00	2.30E-01
Silver	Silver	Rat	LOAEL	0	8.90E+01		Ventricular hypertrophy	Olcott, 1950	1	10	10	1.00E+00	8.90E-01
Vanadium	Vanadium	Mallard Duck	NOAEL	110	1.14E+01		Weight loss, mortality, Vd residues in eggs	White and Deiter, 1978	1	1	1	1.00E+00	1.14E+01
Zinc	Zinc	Mallard Duck	NOAEL	Not Available	1.72E+01		Body weight, reproductive and pancreatic effects	Gasaway and Buss 1972	1	1	1	1.00E+00	1.72E+01
Misc. Organic													
Methylene chloride	Methylene chloride	Rat	NOAEL	Not Available	1.20E+03		Hepatic Effects	Kirschman et al.1986	1	10	1	1.00E+00	1.20E+02
PAH Group 1													
Anthracene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02	*	Increased liver weight and blood flow to liver	Eisler, 1987	1	1	10	1.00E+00	2.09E+01
Benzo(g,h,i)perylene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02	*	Increased liver weight and blood flow to liver	Eisler, 1987	1	1	10	1.00E+00	2.09E+01

Table L4-4. Toxicity Reference Values for Birds

COPEC	Surrogate Chemical	Test Species	Endpoint Type	Concentration in Feed (mg/kg)	Dosage (mg/kg-day)	Effect or Measurement Endpoint	Reference	Chemical Extrapo-lation	Taxonomic Extrapo-lation	Endpoint Extrapo-lation	Allometric Adjustment	TRV (mg/kg-day)
Fluoranthene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	1	1	10	1.00E+00	2.09E+01
Phenanthrene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	1	1	10	1.00E+00	2.09E+01
Pyrene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	1	1	10	1.00E+00	2.09E+01
PAH Group 2												
Benzo(a)anthracene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Benzo(a)pyrene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Benzo(b)fluoranthene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Benzo(k)fluoranthene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Chrysene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Dibenz(a,h)anthracene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Indeno(1,2,3-cd)pyrene	Phenanthrene	Mallard Duck	LOAEL	4000	2.09E+02 *	Increased liver weight and blood flow to liver	Eisler, 1987	10	1	10	1.00E+00	2.09E+00
Phthalate Esters												
Bis (2-ethylhexyl) phthalate	Bis (2-ethylhexyl) phthalate	Ringed Dove	NOAEL	Not Available	1.10E+00	Reproduction	Peakall, 1974	1	1	1	1.00E+00	1.10E+00
Diethylphthalate	Bis (2-ethylhexyl) phthalate	Ringed Dove	NOAEL	Not Available	1.10E+00	Reproduction	Peakall, 1974	1	1	1	1.00E+00	1.10E+00
Semivolatile Organic Compound												
Hexachlorobenzene	Hexachlorobenzene	Japanese Quail	NOAEL	5	4.32E-01 *	Decreased egg volume	Vos et al., 1971	1	1	1	1.00E+00	4.32E-01
Phenol	Phenol	Rat	NOAEL	Not Available	7.21E+02	Liver abnormalilites	NCI, 1980	1	10	1	1.00E+00	7.21E+01
Volatile Organic Compound												
Acetone	Acetone	Rat	NOEAL	0	1.00E+02	Liver and Kidney damage	EPA, 1986	1	10	1	1.00E+00	1.00E+01

* = Dose calculated from concentration in feed as described in the text.
Empty cells indicate that no toxicity data were available for the COPEC or a suitable surrogate.

Appendix L5

Table L5-1. Ornate Shrew Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	1.85E-05	3.56E-07	0.00E+00	2.79E-05	2.83E-05	1.28E-06	2E+01	1
Aluminum	1.58E+04	3.05E+02	0.00E+00	1.73E+03	2.03E+03	2.13E+00	1E+03	1
Antimony	2.10E+00	4.05E-02	0.00E+00	6.68E-01	7.08E-01	6.00E-02	1E+01	1
Arsenic	4.63E+00	8.92E-02	0.00E+00	2.29E-01	3.18E-01	4.09E-01	8E-01	1
Barium	1.87E+02	3.60E+00	0.00E+00	2.16E+01	2.52E+01	4.80E+01	5E-01	1
Beryllium	3.10E-01	5.97E-03	0.00E+00	9.86E-02	1.05E-01	4.80E-01	2E-01	1
Cadmium	1.00E+00	1.93E-02	0.00E+00	2.66E+00	2.68E+00	5.50E-01	5E+00	1
Chromium	1.58E+01	3.05E-01	0.00E+00	3.19E+00	3.50E+00	3.50E+03	1E-03	1
Cobalt	7.60E+00	1.46E-01	0.00E+00	2.42E+00	2.56E+00	7.30E+00	4E-01	1
Copper	1.08E+01	2.08E-01	0.00E+00	3.21E+00	3.42E+00	2.95E+00	1E+00	1
Lead	2.07E+01	3.99E-01	0.00E+00	2.98E+00	3.38E+00	5.80E+00	6E-01	1
Manganese	2.89E+02	5.57E+00	0.00E+00	6.82E+00	1.24E+01	1.51E+01	8E-01	1
Mercury	6.90E-02	1.33E-03	0.00E+00	1.18E-01	1.20E-01	3.20E-01	4E-01	1
Nickel	1.37E+01	2.64E-01	0.00E+00	6.43E+00	6.69E+00	1.67E-01	4E+01	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Selenium	1.10E+00	2.12E-02	0.00E+00	4.65E-01	4.86E-01	5.46E-02	9E+00	1
Silver	2.00E+00	3.85E-02	0.00E+00	6.36E-01	6.75E-01	1.14E+01	6E-02	1
Vanadium	4.41E+01	8.50E-01	0.00E+00	1.40E+01	1.49E+01	1.14E+00	1E+01	1
Zinc	5.71E+01	1.10E+00	0.00E+00	1.04E+02	1.05E+02	1.05E+01	1E+01	1
Methylene chloride	9.20E-03	1.77E-04	0.00E+00	2.96E-03	3.13E-03	1.47E+03	2E-06	1
Anthracene	4.40E-02	8.48E-04	0.00E+00	4.52E-03	5.37E-03	6.30E+01	9E-05	1
Benzo(g,h,i)perylene	4.40E-01	8.48E-03	0.00E+00	2.12E-02	2.97E-02	6.30E+01	5E-04	1
Fluoranthene	1.00E+00	1.93E-02	0.00E+00	1.19E-01	1.38E-01	6.30E+01	2E-03	1
Phenanthrene	2.90E-01	5.59E-03	0.00E+00	2.61E-02	3.17E-02	6.30E+01	5E-04	1
Pyrene	9.60E-01	1.85E-02	0.00E+00	1.20E-01	1.39E-01	6.30E+01	2E-03	1
Benzo(a)anthracene	7.30E-01	1.41E-02	0.00E+00	6.33E-02	7.74E-02	1.45E+00	5E-02	1
Benzo(a)pyrene	1.03E+00	1.99E-02	0.00E+00	1.12E-01	1.32E-01	1.45E+00	9E-02	1
Benzo(b)fluoranthene	1.79E+00	3.45E-02	0.00E+00	1.21E-01	1.55E-01	1.45E+00	1E-01	1
Benzo(k)fluoranthene	5.10E-01	9.83E-03	0.00E+00	3.44E-02	4.42E-02	1.45E+00	3E-02	1
Chrysene	8.70E-01	1.68E-02	0.00E+00	1.23E-01	1.40E-01	1.45E+00	1E-01	1
Dibenz(a,h)anthracene	9.70E-02	1.87E-03	0.00E+00	1.53E-02	1.71E-02	1.45E+00	1E-02	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Indeno(1,2,3-cd)pyrene	4.60E-01	8.87E-03	0.00E+00	6.06E-02	6.94E-02	1.45E+00	5E-02	1
Bis (2-ethylhexyl) phthalate	7.00E-02	1.35E-03	0.00E+00	2.25E-02	2.38E-02	2.56E+01	9E-04	1
Diethylphthalate	2.25E-01	4.34E-03	0.00E+00	7.23E-02	7.66E-02	5.06E+03	2E-05	1
Hexachlorobenzene	1.50E-01	2.89E-03	0.00E+00	8.14E-02	8.43E-02	2.56E+00	3E-02	1
Phenol	9.36E-01	1.80E-02	0.00E+00	3.01E-01	3.19E-01	9.22E+02	3E-04	1
Acetone	1.00E-01	1.93E-03	0.00E+00	3.21E-02	3.40E-02	1.28E+01	3E-03	1

Table L5-2. Deer Mouse Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	1.85E-05	7.06E-08	2.43E-07	0.00E+00	3.14E-07	1.19E-06	3E-01	1
Aluminum	1.58E+04	6.04E+01	5.44E-01	0.00E+00	6.10E+01	1.98E+00	3E+01	1
Antimony	2.10E+00	8.03E-03	4.42E-03	0.00E+00	1.25E-02	6.00E-02	2E-01	1
Arsenic	4.63E+00	1.77E-02	6.19E-02	0.00E+00	7.97E-02	3.80E-01	2E-01	1
Barium	1.87E+02	7.15E-01	1.79E-01	0.00E+00	8.94E-01	4.80E+01	2E-02	1
Beryllium	3.10E-01	1.19E-03	2.79E-05	0.00E+00	1.21E-03	4.80E-01	3E-03	1
Cadmium	1.00E+00	3.83E-03	1.19E-01	0.00E+00	1.23E-01	5.50E-01	2E-01	1
Chromium	1.58E+01	6.04E-02	7.56E-04	0.00E+00	6.12E-02	3.25E+03	2E-05	1
Cobalt	7.60E+00	2.91E-02	1.37E-02	0.00E+00	4.27E-02	7.30E+00	6E-03	1
Copper	1.08E+01	4.13E-02	9.54E-01	0.00E+00	9.95E-01	2.74E+00	4E-01	1
Lead	2.07E+01	7.92E-02	2.77E-01	0.00E+00	3.57E-01	5.80E+00	6E-02	1
Manganese	2.89E+02	1.11E+00	1.66E+00	0.00E+00	2.76E+00	1.41E+01	2E-01	1
Mercury	6.90E-02	2.64E-04	1.65E-02	0.00E+00	1.68E-02	2.97E-01	6E-02	1
Nickel	1.37E+01	5.24E-02	1.47E-01	0.00E+00	1.99E-01	1.55E-01	1E+00	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Selenium	1.10E+00	4.21E-03	1.08E-01	0.00E+00	1.12E-01	5.07E-02	2E+00	1
Silver	2.00E+00	7.65E-03	5.74E-02	0.00E+00	6.50E-02	1.06E+01	6E-03	1
Vanadium	4.41E+01	1.69E-01	1.10E-02	0.00E+00	1.80E-01	1.06E+00	2E-01	1
Zinc	5.71E+01	2.18E-01	8.72E+00	0.00E+00	8.94E+00	9.76E+00	9E-01	1
Methylene chloride	9.20E-03	3.52E-05	1.19E-02	0.00E+00	1.19E-02	1.37E+03	9E-06	1
Anthracene	4.40E-02	1.68E-04	3.05E-03	0.00E+00	3.22E-03	5.86E+01	5E-05	1
Benzo(g,h,i)perylene	4.40E-01	1.68E-03	4.53E-03	0.00E+00	6.21E-03	5.86E+01	1E-04	1
Fluoranthene	1.00E+00	3.83E-03	4.17E-02	0.00E+00	4.55E-02	5.86E+01	8E-04	1
Phenanthrene	2.90E-01	1.11E-03	2.01E-02	0.00E+00	2.12E-02	5.86E+01	4E-04	1
Pyrene	9.60E-01	3.67E-03	4.04E-02	0.00E+00	4.41E-02	5.86E+01	8E-04	1
Benzo(a)anthracene	7.30E-01	2.79E-03	1.82E-02	0.00E+00	2.09E-02	1.34E+00	2E-02	1
Benzo(a)pyrene	1.03E+00	3.94E-03	1.79E-02	0.00E+00	2.18E-02	1.34E+00	2E-02	1
Benzo(b)fluoranthene	1.79E+00	6.85E-03	2.87E-02	0.00E+00	3.55E-02	1.34E+00	3E-02	1
Benzo(k)fluoranthene	5.10E-01	1.95E-03	8.18E-03	0.00E+00	1.01E-02	1.34E+00	8E-03	1
Chrysene	8.70E-01	3.33E-03	2.16E-02	0.00E+00	2.50E-02	1.34E+00	2E-02	1
Dibenz(a,h)anthracene	9.70E-02	3.71E-04	1.01E-03	0.00E+00	1.38E-03	1.34E+00	1E-03	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Indeno(1,2,3-cd)pyrene	4.60E-01	1.76E-03	4.95E-03	0.00E+00	6.71E-03	1.34E+00	5E-03	1
Bis (2-ethylhexyl) phthalate	7.00E-02	2.68E-04	4.23E-04	0.00E+00	6.91E-04	2.38E+01	3E-05	1
Diethylphthalate	2.25E-01	8.61E-04	9.60E-02	0.00E+00	9.68E-02	4.70E+03	2E-05	1
Hexachlorobenzene	1.50E-01	5.74E-04	3.16E-03	0.00E+00	3.73E-03	2.38E+00	2E-03	1
Phenol	9.36E-01	3.58E-03	3.65E+00	0.00E+00	3.66E+00	8.57E+02	4E-03	1
Acetone	1.00E-01	3.83E-04	4.84E-01	0.00E+00	4.84E-01	1.19E+01	4E-02	1

Table L5-3. Long-tailed Weasel Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	1.85E-05	1.73E-07	0.00E+00	0.00E+00	3.71E-10	7.51E-09	1.81E-07	1.02E-06	2E-01	1
Aluminum	1.58E+04	1.48E+02	0.00E+00	0.00E+00	8.14E-04	6.09E-03	1.48E+02	1.69E+00	9E+01	1
Antimony	2.10E+00	1.97E-02	0.00E+00	0.00E+00	3.33E-07	4.25E-06	1.97E-02	6.00E-02	3E-01	1
Arsenic	4.63E+00	4.34E-02	0.00E+00	0.00E+00	1.06E-06	9.54E-07	4.34E-02	3.25E-01	1E-01	1
Barium	1.87E+02	1.75E+00	0.00E+00	0.00E+00	3.98E-06	2.52E-05	1.75E+00	4.80E+01	4E-02	1
Beryllium	3.10E-01	2.90E-03	0.00E+00	0.00E+00	8.64E-09	1.67E-07	2.90E-03	4.80E-01	6E-03	1
Cadmium	1.00E+00	9.36E-03	0.00E+00	0.00E+00	1.75E-05	8.57E-05	9.47E-03	5.50E-01	2E-02	1
Chromium	1.58E+01	1.48E-01	0.00E+00	0.00E+00	1.31E-06	1.68E-05	1.48E-01	2.78E+03	5E-05	1
Cobalt	7.60E+00	7.12E-02	0.00E+00	0.00E+00	3.80E-07	5.13E-06	7.12E-02	7.30E+00	1E-02	1
Copper	1.08E+01	1.01E-01	0.00E+00	0.00E+00	8.86E-05	6.84E-05	1.01E-01	2.34E+00	4E-02	1
Lead	2.07E+01	1.94E-01	0.00E+00	0.00E+00	9.21E-07	1.96E-06	1.94E-01	5.80E+00	3E-02	1
Manganese	2.89E+02	2.71E+00	0.00E+00	0.00E+00	1.23E-04	1.24E-04	2.71E+00	1.20E+01	2E-01	1
Mercury	6.90E-02	6.46E-04	0.00E+00	0.00E+00	1.49E-05	2.39E-05	6.85E-04	2.54E-01	3E-03	1
Nickel	1.37E+01	1.28E-01	0.00E+00	0.00E+00	1.77E-06	1.34E-05	1.28E-01	1.33E-01	1E+00	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Selenium	1.10E+00	1.03E-02	0.00E+00	0.00E+00	9.98E-04	9.72E-04	1.23E-02	4.34E-02	3E-01	1
Silver	2.00E+00	1.87E-02	0.00E+00	0.00E+00	9.84E-06	2.29E-05	1.88E-02	9.05E+00	2E-03	1
Vanadium	4.41E+01	4.13E-01	0.00E+00	0.00E+00	3.68E-06	6.84E-05	4.13E-01	9.05E-01	5E-01	1
Zinc	5.71E+01	5.35E-01	0.00E+00	0.00E+00	3.98E-03	1.05E-02	5.49E-01	8.35E+00	7E-02	1
Methylene chloride	9.20E-03	8.62E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.62E-05	1.17E+03	7E-08	1
Anthracene	4.40E-02	4.12E-04	0.00E+00	0.00E+00	2.01E-08	7.55E-09	4.12E-04	5.01E+01	8E-06	1
Benzo(g,h,i)perylene	4.40E-01	4.12E-03	0.00E+00	0.00E+00	4.39E-06	4.71E-06	4.13E-03	5.01E+01	8E-05	1
Fluoranthene	1.00E+00	9.36E-03	0.00E+00	0.00E+00	1.04E-06	7.07E-07	9.37E-03	5.01E+01	2E-04	1
Phenanthrene	2.90E-01	2.72E-03	0.00E+00	0.00E+00	1.37E-07	4.61E-08	2.72E-03	5.01E+01	5E-05	1
Pyrene	9.60E-01	8.99E-03	0.00E+00	0.00E+00	2.07E-06	1.46E-06	8.99E-03	5.01E+01	2E-04	1
Benzo(a)anthracene	7.30E-01	6.84E-03	0.00E+00	0.00E+00	1.87E-06	1.55E-06	6.84E-03	1.15E+00	6E-03	1
Benzo(a)pyrene	1.03E+00	9.65E-03	0.00E+00	0.00E+00	5.85E-06	7.98E-06	9.66E-03	1.15E+00	8E-03	1
Benzo(b)fluoranthene	1.79E+00	1.68E-02	0.00E+00	0.00E+00	9.54E-06	9.36E-06	1.68E-02	1.15E+00	1E-02	1
Benzo(k)fluoranthene	5.10E-01	4.78E-03	0.00E+00	0.00E+00	2.72E-06	2.67E-06	4.78E-03	1.15E+00	4E-03	1
Chrysene	8.70E-01	8.15E-03	0.00E+00	0.00E+00	2.29E-06	2.88E-06	8.15E-03	1.15E+00	7E-03	1
Dibenz(a,h)anthracene	9.70E-02	9.08E-04	0.00E+00	0.00E+00	1.26E-07	3.53E-07	9.09E-04	1.15E+00	8E-04	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Indeno(1,2,3-cd)pyrene	4.60E-01	4.31E-03	0.00E+00	0.00E+00	4.80E-06	1.12E-05	4.32E-03	1.15E+00	4E-03	1
Bis (2-ethylhexyl) phthalate	7.00E-02	6.56E-04	0.00E+00	0.00E+00	6.15E-06	4.77E-05	7.09E-04	2.03E+01	3E-05	1
Diethylphthalate	2.25E-01	2.11E-03	0.00E+00	0.00E+00	9.05E-08	1.61E-08	2.11E-03	4.02E+03	5E-07	1
Hexachlorobenzene	1.50E-01	1.40E-03	0.00E+00	0.00E+00	2.17E-07	1.10E-06	1.41E-03	2.03E+00	7E-04	1
Phenol	9.36E-01	8.77E-03	0.00E+00	0.00E+00	2.34E-08	4.59E-10	8.77E-03	7.33E+02	1E-05	1
Acetone	1.00E-01	9.36E-04	0.00E+00	0.00E+00	1.60E-08	2.52E-10	9.37E-04	1.02E+01	9E-05	1

Table L5-4. Mourning Dove Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-05	1.13E-07	3.89E-07	0.00E+00	5.02E-07	1.43E-05	4E-02	1
Aluminum	1.58E+04	5.06E+01	4.55E-01	0.00E+00	5.11E+01	1.10E+02	5E-01	1
Antimony	2.10E+00	6.73E-03	3.70E-03	0.00E+00	1.04E-02	6.00E-03	2E+00	1
Arsenic	4.63E+00	1.48E-02	5.18E-02	0.00E+00	6.67E-02	5.50E+00	1E-02	1
Barium	1.87E+02	5.99E-01	1.50E-01	0.00E+00	7.49E-01	2.08E+01	4E-02	1
Beryllium	3.10E-01	9.93E-04	2.33E-05	0.00E+00	1.02E-03	4.80E-02	2E-02	1
Cadmium	1.00E+00	3.20E-03	9.95E-02	0.00E+00	1.03E-01	1.60E+00	6E-02	1
Chromium	1.58E+01	5.06E-02	6.32E-04	0.00E+00	5.12E-02	1.00E+00	5E-02	1
Cobalt	7.60E+00	2.43E-02	1.14E-02	0.00E+00	3.58E-02	7.60E+00	5E-03	1
Copper	1.08E+01	3.46E-02	7.98E-01	0.00E+00	8.33E-01	2.30E+00	4E-01	1
Lead	2.07E+01	6.63E-02	2.32E-01	0.00E+00	2.99E-01	1.60E+00	2E-01	1
Manganese	2.89E+02	9.26E-01	1.39E+00	0.00E+00	2.31E+00	7.76E+01	3E-02	1
Mercury	6.90E-02	2.21E-04	1.38E-02	0.00E+00	1.40E-02	3.90E-02	4E-01	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Nickel	1.37E+01	4.39E-02	1.23E-01	0.00E+00	1.67E-01	1.38E+00	1E-01	1
Selenium	1.10E+00	3.52E-03	9.03E-02	0.00E+00	9.38E-02	2.30E-01	4E-01	1
Silver	2.00E+00	6.40E-03	4.80E-02	0.00E+00	5.44E-02	8.90E-01	6E-02	1
Vanadium	4.41E+01	1.41E-01	9.18E-03	0.00E+00	1.50E-01	1.14E+01	1E-02	1
Zinc	5.71E+01	1.83E-01	7.30E+00	0.00E+00	7.48E+00	1.72E+01	4E-01	1
Methylene chloride	9.20E-03	2.95E-05	9.93E-03	0.00E+00	9.96E-03	1.20E+02	8E-05	1
Anthracene	4.40E-02	1.41E-04	2.55E-03	0.00E+00	2.69E-03	2.09E+01	1E-04	1
Benzo(g,h,i)perylene	4.40E-01	1.41E-03	3.79E-03	0.00E+00	5.20E-03	2.09E+01	2E-04	1
Fluoranthene	1.00E+00	3.20E-03	3.49E-02	0.00E+00	3.81E-02	2.09E+01	2E-03	1
Phenanthrene	2.90E-01	9.29E-04	1.68E-02	0.00E+00	1.77E-02	2.09E+01	8E-04	1
Pyrene	9.60E-01	3.07E-03	3.38E-02	0.00E+00	3.69E-02	2.09E+01	2E-03	1
Benzo(a)anthracene	7.30E-01	2.34E-03	1.52E-02	0.00E+00	1.75E-02	2.09E+00	8E-03	1
Benzo(a)pyrene	1.03E+00	3.30E-03	1.50E-02	0.00E+00	1.83E-02	2.09E+00	9E-03	1
Benzo(b)fluoranthene	1.79E+00	5.73E-03	2.40E-02	0.00E+00	2.98E-02	2.09E+00	1E-02	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Benzo(k)fluoranthene	5.10E-01	1.63E-03	6.84E-03	0.00E+00	8.48E-03	2.09E+00	4E-03	1
Chrysene	8.70E-01	2.79E-03	1.81E-02	0.00E+00	2.09E-02	2.09E+00	1E-02	1
Dibenz(a,h)anthracene	9.70E-02	3.11E-04	8.42E-04	0.00E+00	1.15E-03	2.09E+00	6E-04	1
Indeno(1,2,3-cd)pyrene	4.60E-01	1.47E-03	4.14E-03	0.00E+00	5.61E-03	2.09E+00	3E-03	1
Bis (2-ethylhexyl) phthalate	7.00E-02	2.24E-04	3.54E-04	0.00E+00	5.78E-04	1.10E+00	5E-04	1
Diethylphthalate	2.25E-01	7.21E-04	8.03E-02	0.00E+00	8.11E-02	1.10E+00	7E-02	1
Hexachlorobenzene	1.50E-01	4.80E-04	2.64E-03	0.00E+00	3.12E-03	4.32E-01	7E-03	1
Phenol	9.36E-01	3.00E-03	3.06E+00	0.00E+00	3.06E+00	7.21E+01	4E-02	1
Acetone	1.00E-01	3.20E-04	4.05E-01	0.00E+00	4.05E-01	1.00E+01	4E-02	1

Table L5-5. Western Meadowlark Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-05	2.29E-07	0.00E+00	4.04E-05	4.06E-05	1.43E-05	3E+00	1
Aluminum	1.58E+04	1.02E+02	0.00E+00	1.16E+03	1.26E+03	1.10E+02	1E+01	1
Antimony	2.10E+00	1.36E-02	0.00E+00	4.49E-01	4.63E-01	6.00E-03	8E+01	1
Arsenic	4.63E+00	3.00E-02	0.00E+00	1.54E-01	1.84E-01	5.50E+00	3E-02	1
Barium	1.87E+02	1.21E+00	0.00E+00	1.45E+01	1.58E+01	2.08E+01	8E-01	1
Beryllium	3.10E-01	2.01E-03	0.00E+00	6.63E-02	6.83E-02	4.80E-02	1E+00	1
Cadmium	1.00E+00	6.48E-03	0.00E+00	1.79E+00	1.79E+00	1.60E+00	1E+00	1
Chromium	1.58E+01	1.02E-01	0.00E+00	2.15E+00	2.25E+00	1.00E+00	2E+00	1
Cobalt	7.60E+00	4.92E-02	0.00E+00	1.62E+00	1.67E+00	7.60E+00	2E-01	1
Copper	1.08E+01	7.00E-02	0.00E+00	2.16E+00	2.23E+00	2.30E+00	1E+00	1
Lead	2.07E+01	1.34E-01	0.00E+00	2.00E+00	2.14E+00	1.60E+00	1E+00	1
Manganese	2.89E+02	1.87E+00	0.00E+00	4.59E+00	6.46E+00	7.76E+01	8E-02	1
Mercury	6.90E-02	4.47E-04	0.00E+00	7.95E-02	7.99E-02	3.90E-02	2E+00	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Nickel	1.37E+01	8.88E-02	0.00E+00	4.32E+00	4.41E+00	1.38E+00	3E+00	1
Selenium	1.10E+00	7.13E-03	0.00E+00	3.13E-01	3.20E-01	2.30E-01	1E+00	1
Silver	2.00E+00	1.30E-02	0.00E+00	4.28E-01	4.41E-01	8.90E-01	5E-01	1
Vanadium	4.41E+01	2.86E-01	0.00E+00	9.43E+00	9.71E+00	1.14E+01	9E-01	1
Zinc	5.71E+01	3.70E-01	0.00E+00	6.96E+01	7.00E+01	1.72E+01	4E+00	1
Methylene chloride	9.20E-03	5.96E-05	0.00E+00	1.99E-03	2.05E-03	1.20E+02	2E-05	1
Anthracene	4.40E-02	2.85E-04	0.00E+00	3.04E-03	3.33E-03	2.09E+01	2E-04	1
Benzo(g,h,i)perylene	4.40E-01	2.85E-03	0.00E+00	1.43E-02	1.71E-02	2.09E+01	8E-04	1
Fluoranthene	1.00E+00	6.48E-03	0.00E+00	7.99E-02	8.64E-02	2.09E+01	4E-03	1
Phenanthrene	2.90E-01	1.88E-03	0.00E+00	1.75E-02	1.94E-02	2.09E+01	9E-04	1
Pyrene	9.60E-01	6.22E-03	0.00E+00	8.09E-02	8.71E-02	2.09E+01	4E-03	1
Benzo(a)anthracene	7.30E-01	4.73E-03	0.00E+00	4.26E-02	4.73E-02	2.09E+00	2E-02	1
Benzo(a)pyrene	1.03E+00	6.67E-03	0.00E+00	7.56E-02	8.23E-02	2.09E+00	4E-02	1
Benzo(b)fluoranthene	1.79E+00	1.16E-02	0.00E+00	8.12E-02	9.28E-02	2.09E+00	4E-02	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Benzo(k)fluoranthene	5.10E-01	3.30E-03	0.00E+00	2.31E-02	2.64E-02	2.09E+00	1E-02	1
Chrysene	8.70E-01	5.64E-03	0.00E+00	8.27E-02	8.83E-02	2.09E+00	4E-02	1
Dibenz(a,h)anthracene	9.70E-02	6.28E-04	0.00E+00	1.03E-02	1.09E-02	2.09E+00	5E-03	1
Dibenz(a,h)anthracene	9.70E-02	6.28E-04	0.00E+00	1.03E-02	1.09E-02	2.09E+00	5E-03	1
Indeno(1,2,3-cd)pyrene	4.60E-01	2.98E-03	0.00E+00	4.07E-02	4.37E-02	2.09E+00	2E-02	1
Bis (2-ethylhexyl) phthalate	7.00E-02	4.54E-04	0.00E+00	1.51E-02	1.56E-02	1.10E+00	1E-02	1
Diethylphthalate	2.25E-01	1.46E-03	0.00E+00	4.86E-02	5.00E-02	1.10E+00	5E-02	1
Hexachlorobenzene	1.50E-01	9.72E-04	0.00E+00	5.47E-02	5.57E-02	4.32E-01	1E-01	1
Phenol	9.36E-01	6.06E-03	0.00E+00	2.02E-01	2.08E-01	7.21E+01	3E-03	1
Acetone	1.00E-01	6.48E-04	0.00E+00	2.16E-02	2.22E-02	1.00E+01	2E-03	1

Table L5-6. Red-shouldered Hawk Soil Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-05	1.18E-07	0.00E+00	0.00E+00	3.81E-10	8.65E-09	1.27E-07	1.43E-05	9E-03	1
Aluminum	1.58E+04	5.29E+01	0.00E+00	0.00E+00	4.36E-04	3.26E-03	5.29E+01	1.10E+02	5E-01	1
Antimony	2.10E+00	7.03E-03	0.00E+00	0.00E+00	1.78E-07	2.28E-06	7.03E-03	6.00E-03	1E+00	1
Arsenic	4.63E+00	1.55E-02	0.00E+00	0.00E+00	5.70E-07	5.11E-07	1.55E-02	5.50E+00	3E-03	1
Barium	1.87E+02	6.26E-01	0.00E+00	0.00E+00	2.13E-06	1.35E-05	6.26E-01	2.08E+01	3E-02	1
Beryllium	3.10E-01	1.04E-03	0.00E+00	0.00E+00	4.63E-09	8.96E-08	1.04E-03	4.80E-02	2E-02	1
Cadmium	1.00E+00	3.35E-03	0.00E+00	0.00E+00	9.36E-06	4.59E-05	3.40E-03	1.60E+00	2E-03	1
Chromium	1.58E+01	5.29E-02	0.00E+00	0.00E+00	7.01E-07	8.99E-06	5.29E-02	1.00E+00	5E-02	1
Cobalt	7.60E+00	2.54E-02	0.00E+00	0.00E+00	2.04E-07	2.75E-06	2.54E-02	7.60E-01	3E-02	1
Copper	1.08E+01	3.61E-02	0.00E+00	0.00E+00	4.75E-05	3.67E-05	3.62E-02	2.30E+00	2E-02	1
Lead	2.07E+01	6.93E-02	0.00E+00	0.00E+00	4.93E-07	1.05E-06	6.93E-02	1.60E+00	4E-02	1
Manganese	2.89E+02	9.67E-01	0.00E+00	0.00E+00	6.59E-05	6.64E-05	9.67E-01	7.76E+01	1E-02	1
Mercury	6.90E-02	2.31E-04	0.00E+00	0.00E+00	8.00E-06	1.28E-05	2.52E-04	3.90E-02	6E-03	1
Nickel	1.37E+01	4.58E-02	0.00E+00	0.00E+00	9.49E-07	7.17E-06	4.58E-02	1.38E+00	3E-02	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Selenium	1.10E+00	3.68E-03	0.00E+00	0.00E+00	5.35E-04	5.21E-04	4.74E-03	2.30E-01	2E-02	1
Silver	2.00E+00	6.69E-03	0.00E+00	0.00E+00	5.27E-06	1.23E-05	6.71E-03	8.90E-01	8E-03	1
Vanadium	4.41E+01	1.48E-01	0.00E+00	0.00E+00	1.97E-06	3.67E-05	1.48E-01	1.14E+01	1E-02	1
Zinc	5.71E+01	1.91E-01	0.00E+00	0.00E+00	2.13E-03	5.61E-03	1.99E-01	1.72E+01	1E-02	1
Methylene chloride	9.20E-03	3.08E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.08E-05	1.20E+02	3E-07	1
Anthracene	4.40E-02	1.47E-04	0.00E+00	0.00E+00	1.08E-08	4.05E-09	1.47E-04	2.09E+01	7E-06	1
Benzo(g,h,i)perylene	4.40E-01	1.47E-03	0.00E+00	0.00E+00	2.35E-06	2.52E-06	1.48E-03	2.09E+01	7E-05	1
Fluoranthene	1.00E+00	3.35E-03	0.00E+00	0.00E+00	5.56E-07	3.79E-07	3.35E-03	2.09E+01	2E-04	1
Phenanthrene	2.90E-01	9.70E-04	0.00E+00	0.00E+00	7.36E-08	2.47E-08	9.70E-04	2.09E+01	5E-05	1
Pyrene	9.60E-01	3.21E-03	0.00E+00	0.00E+00	1.11E-06	7.84E-07	3.21E-03	2.09E+01	2E-04	1
Benzo(a)anthracene	7.30E-01	2.44E-03	0.00E+00	0.00E+00	1.00E-06	8.33E-07	2.44E-03	2.09E+00	1E-03	1
Benzo(a)pyrene	1.03E+00	3.45E-03	0.00E+00	0.00E+00	3.14E-06	4.27E-06	3.45E-03	2.09E+00	2E-03	1
Benzo(b)fluoranthene	1.79E+00	5.99E-03	0.00E+00	0.00E+00	5.11E-06	5.01E-06	6.00E-03	2.09E+00	3E-03	1
Benzo(k)fluoranthene	5.10E-01	1.71E-03	0.00E+00	0.00E+00	1.46E-06	1.43E-06	1.71E-03	2.09E+00	8E-04	1
Chrysene	8.70E-01	2.91E-03	0.00E+00	0.00E+00	1.23E-06	1.54E-06	2.91E-03	2.09E+00	1E-03	1
Dibenz(a,h)anthracene	9.70E-02	3.25E-04	0.00E+00	0.00E+00	6.76E-08	1.89E-07	3.25E-04	2.09E+00	2E-04	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Dibenz(a,h)anthracene	9.70E-02	3.25E-04	0.00E+00	0.00E+00	6.76E-08	1.89E-07	3.25E-04	2.09E+00	2E-04	1
Indeno(1,2,3-cd)pyrene	4.60E-01	1.54E-03	0.00E+00	0.00E+00	2.57E-06	5.98E-06	1.55E-03	2.09E+00	7E-04	1
Bis (2-ethylhexyl) phthalate	7.00E-02	2.34E-04	0.00E+00	0.00E+00	3.30E-06	2.55E-05	2.63E-04	1.10E+00	2E-04	1
Diethylphthalate	2.25E-01	7.53E-04	0.00E+00	0.00E+00	4.85E-08	8.62E-09	7.53E-04	1.10E+00	7E-04	1
Hexachlorobenzene	1.50E-01	5.02E-04	0.00E+00	0.00E+00	1.17E-07	5.92E-07	5.03E-04	4.32E-01	1E-03	1
Phenol	9.36E-01	3.13E-03	0.00E+00	0.00E+00	1.26E-08	2.46E-10	3.13E-03	7.21E+01	4E-05	1
Acetone	1.00E-01	3.35E-04	0.00E+00	0.00E+00	8.55E-09	1.35E-10	3.35E-04	1.00E+01	3E-05	1

Appendix L6

Table L6-1. Ornate Shrew Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	5.88E+01	0.00E+00	3.33E+02	3.92E+02	3.33E+00	1E+02	1
Arsenic	1.80E+00	3.47E-02	0.00E+00	1.17E-01	1.52E-01	1.25E+00	1E-01	1
Barium	1.10E+02	2.12E+00	0.00E+00	1.27E+01	1.48E+01	2.67E+01	6E-01	1
Cadmium	2.60E-01	5.01E-03	0.00E+00	9.12E-01	9.17E-01	3.05E-01	3E+00	1
Chromium	4.40E+00	8.48E-02	0.00E+00	3.48E+00	3.56E+00	1.07E+04	3E-04	1
Cobalt	2.00E+00	3.85E-02	0.00E+00	6.36E-01	6.75E-01	4.05E+00	2E-01	1
Copper	2.50E+00	4.82E-02	0.00E+00	2.18E+00	2.23E+00	4.60E+00	5E-01	1
Lead	1.90E+00	3.66E-02	0.00E+00	4.34E-01	4.70E-01	3.22E+00	1E-01	1
Manganese	1.30E+02	2.51E+00	0.00E+00	3.96E+00	6.46E+00	2.36E+01	3E-01	1
Mercury	6.00E-03	1.16E-04	0.00E+00	8.86E-02	8.87E-02	9.76E-01	9E-02	1
Nickel	2.80E+00	5.40E-02	0.00E+00	9.71E+00	9.77E+00	4.64E-01	2E+01	1
Selenium	1.70E-01	3.28E-03	0.00E+00	2.90E-01	2.93E-01	8.11E-02	4E+00	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Vanadium	1.39E+01	2.68E-01	0.00E+00	4.42E+00	4.69E+00	3.48E+00	1E+00	1
Zinc	1.35E+01	2.60E-01	0.00E+00	6.45E+01	6.48E+01	1.58E+01	4E+00	1

Table L6-2. Deer Mouse Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	1.17E+01	1.05E-01	0.00E+00	1.18E+01	2.22E+00	5E+00	1
Arsenic	1.80E+00	6.89E-03	3.64E-02	0.00E+00	4.32E-02	8.36E-01	5E-02	1
Barium	1.10E+02	4.21E-01	1.05E-01	0.00E+00	5.26E-01	1.78E+01	3E-02	1
Cadmium	2.60E-01	9.95E-04	5.70E-02	0.00E+00	5.80E-02	2.04E-01	3E-01	1
Chromium	4.40E+00	1.68E-02	2.10E-04	0.00E+00	1.70E-02	7.15E+03	2E-06	1
Cobalt	2.00E+00	7.65E-03	3.60E-03	0.00E+00	1.12E-02	2.71E+00	4E-03	1
Copper	2.50E+00	9.56E-03	5.36E-01	0.00E+00	5.45E-01	3.08E+00	2E-01	1
Lead	1.90E+00	7.27E-03	7.27E-02	0.00E+00	7.99E-02	2.15E+00	4E-02	1
Manganese	1.30E+02	4.97E-01	7.46E-01	0.00E+00	1.24E+00	1.58E+01	8E-02	1
Mercury	6.00E-03	2.30E-05	4.37E-03	0.00E+00	4.39E-03	6.53E-01	7E-03	1
Nickel	2.80E+00	1.07E-02	4.47E-02	0.00E+00	5.54E-02	3.10E-01	2E-01	1
Selenium	1.70E-01	6.50E-04	1.37E-02	0.00E+00	1.44E-02	5.42E-02	3E-01	1
Vanadium	1.39E+01	5.32E-02	3.46E-03	0.00E+00	5.66E-02	2.32E+00	2E-02	1
Zinc	1.35E+01	5.16E-02	3.92E+00	0.00E+00	3.97E+00	1.05E+01	4E-01	1

Table L6-3. Long-tailed Weasel Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	2.86E+01	0.00E+00	0.00E+00	1.57E-04	1.18E-03	2.86E+01	9.34E-01	3E+01	1
Arsenic	1.80E+00	1.69E-02	0.00E+00	0.00E+00	5.77E-07	4.56E-07	1.69E-02	3.51E-01	5E-02	1
Barium	1.10E+02	1.03E+00	0.00E+00	0.00E+00	2.34E-06	1.48E-05	1.03E+00	7.49E+00	1E-01	1
Cadmium	2.60E-01	2.43E-03	0.00E+00	0.00E+00	8.25E-06	2.93E-05	2.47E-03	8.58E-02	3E-02	1
Chromium	4.40E+00	4.12E-02	0.00E+00	0.00E+00	3.64E-07	1.71E-05	4.12E-02	3.00E+03	1E-05	1
Cobalt	2.00E+00	1.87E-02	0.00E+00	0.00E+00	1.00E-07	1.35E-06	1.87E-02	1.14E+00	2E-02	1
Copper	2.50E+00	2.34E-02	0.00E+00	0.00E+00	4.85E-05	4.46E-05	2.35E-02	1.29E+00	2E-02	1
Lead	1.90E+00	1.78E-02	0.00E+00	0.00E+00	2.06E-07	2.73E-07	1.78E-02	9.05E-01	2E-02	1
Manganese	1.30E+02	1.22E+00	0.00E+00	0.00E+00	5.53E-05	6.46E-05	1.22E+00	6.63E+00	2E-01	1
Mercury	6.00E-03	5.62E-05	0.00E+00	0.00E+00	3.91E-06	1.77E-05	7.78E-05	2.74E-01	3E-04	1
Nickel	2.80E+00	2.62E-02	0.00E+00	0.00E+00	4.93E-07	1.95E-05	2.62E-02	1.30E-01	2E-01	1
Selenium	1.70E-01	1.59E-03	0.00E+00	0.00E+00	1.28E-04	5.86E-04	2.31E-03	2.28E-02	1E-01	1
Vanadium	1.39E+01	1.30E-01	0.00E+00	0.00E+00	1.16E-06	2.16E-05	1.30E-01	9.76E-01	1E-01	1
Zinc	1.35E+01	1.26E-01	0.00E+00	0.00E+00	1.77E-03	6.48E-03	1.35E-01	4.43E+00	3E-02	1

Table L6-4. Mourning Dove Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	9.77E+00	8.79E-02	0.00E+00	9.86E+00	1.10E+02	9E-02	1
Arsenic	1.80E+00	5.76E-03	3.04E-02	0.00E+00	3.62E-02	5.50E+00	7E-03	1
Barium	1.10E+02	3.52E-01	8.81E-02	0.00E+00	4.40E-01	2.08E+01	2E-02	1
Cadmium	2.60E-01	8.33E-04	4.77E-02	0.00E+00	4.85E-02	1.60E+00	3E-02	1
Chromium	4.40E+00	1.41E-02	1.76E-04	0.00E+00	1.43E-02	1.00E+00	1E-02	1
Cobalt	2.00E+00	6.40E-03	3.01E-03	0.00E+00	9.42E-03	7.60E+00	1E-03	1
Copper	2.50E+00	8.01E-03	4.49E-01	0.00E+00	4.57E-01	2.30E+00	2E-01	1
Lead	1.90E+00	6.08E-03	6.08E-02	0.00E+00	6.69E-02	1.60E+00	4E-02	1
Manganese	1.30E+02	4.16E-01	6.24E-01	0.00E+00	1.04E+00	7.76E+01	1E-02	1
Mercury	6.00E-03	1.92E-05	3.66E-03	0.00E+00	3.68E-03	3.90E-02	9E-02	1
Nickel	2.80E+00	8.97E-03	3.74E-02	0.00E+00	4.64E-02	1.38E+00	3E-02	1
Selenium	1.70E-01	5.44E-04	1.15E-02	0.00E+00	1.20E-02	2.30E-01	5E-02	1
Vanadium	1.39E+01	4.45E-02	2.89E-03	0.00E+00	4.74E-02	1.14E+01	4E-03	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Zinc	1.35E+01	4.32E-02	3.28E+00	0.00E+00	3.32E+00	1.72E+01	2E-01	1

Table L6-5. Spotted Tohee Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-	HQ	Site Use Facto
Aluminum	3.05E+03	2.68E+01	0.00E+00	3.04E+02	3.30E+02	1.10E+02	3E+00	1
Arsenic	1.80E+00	1.58E-02	0.00E+00	1.07E-01	1.23E-01	5.50E+00	2E-02	1
Barium	1.10E+02	9.66E-01	0.00E+00	1.16E+01	1.26E+01	2.08E+01	6E-01	1
Cadmium	2.60E-01	2.28E-03	0.00E+00	8.31E-01	8.33E-01	1.60E+00	5E-01	1
Chromium	4.40E+00	3.87E-02	0.00E+00	3.17E+00	3.21E+00	1.00E+00	3E+00	1
Cobalt	2.00E+00	1.76E-02	0.00E+00	5.80E-01	5.97E-01	7.60E+00	8E-02	1
Copper	2.50E+00	2.20E-02	0.00E+00	1.99E+00	2.01E+00	2.30E+00	9E-01	1
Lead	1.90E+00	1.67E-02	0.00E+00	3.95E-01	4.12E-01	1.60E+00	3E-01	1
Manganese	1.30E+02	1.14E+00	0.00E+00	3.61E+00	4.75E+00	7.76E+01	6E-02	1
Mercury	6.00E-03	5.27E-05	0.00E+00	8.08E-02	8.08E-02	3.90E-02	2E+00	1
Nickel	2.80E+00	2.46E-02	0.00E+00	8.86E+00	8.88E+00	1.38E+00	6E+00	1
Selenium	1.70E-01	1.49E-03	0.00E+00	2.64E-01	2.66E-01	2.30E-01	1E+00	1
Vanadium	1.39E+01	1.22E-01	0.00E+00	4.03E+00	4.15E+00	1.14E+01	4E-01	1

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-	HQ	Site Use Facto
Zinc	1.35E+01	1.19E-01	0.00E+00	5.88E+01	5.89E+01	1.72E+01	3E+00	1

Table L6-6. Red-shouldered Hawk Sediment Pathway, Anomaly Area 3, Tier 1 Screen

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	1.02E+01	0.00E+00	0.00E+00	8.42E-05	6.30E-04	1.02E+01	9.34E-01	1E+01	1
Arsenic	1.80E+00	6.02E-03	0.00E+00	0.00E+00	3.09E-07	2.45E-07	6.02E-03	3.51E-01	2E-02	1
Barium	1.10E+02	3.68E-01	0.00E+00	0.00E+00	1.25E-06	7.95E-06	3.68E-01	7.49E+00	5E-02	1
Cadmium	2.60E-01	8.70E-04	0.00E+00	0.00E+00	4.42E-06	1.57E-05	8.90E-04	8.58E-02	1E-02	1
Chromium	4.40E+00	1.47E-02	0.00E+00	0.00E+00	1.95E-07	9.16E-06	1.47E-02	3.00E+03	5E-06	1
Cobalt	2.00E+00	6.69E-03	0.00E+00	0.00E+00	5.37E-08	7.23E-07	6.69E-03	1.14E+00	6E-03	1
Copper	2.50E+00	8.36E-03	0.00E+00	0.00E+00	2.60E-05	2.39E-05	8.41E-03	1.29E+00	7E-03	1
Lead	1.90E+00	6.36E-03	0.00E+00	0.00E+00	1.11E-07	1.46E-07	6.36E-03	9.05E-01	7E-03	1
Manganese	1.30E+02	4.35E-01	0.00E+00	0.00E+00	2.97E-05	3.46E-05	4.35E-01	6.63E+00	7E-02	1
Mercury	6.00E-03	2.01E-05	0.00E+00	0.00E+00	2.10E-06	9.51E-06	3.17E-05	2.74E-01	1E-04	1
Nickel	2.80E+00	9.37E-03	0.00E+00	0.00E+00	2.64E-07	1.05E-05	9.38E-03	1.30E-01	7E-02	1
Selenium	1.70E-01	5.69E-04	0.00E+00	0.00E+00	6.86E-05	3.14E-04	9.52E-04	2.28E-02	4E-02	1
Vanadium	1.39E+01	4.65E-02	0.00E+00	0.00E+00	6.21E-07	1.16E-05	4.65E-02	9.76E-01	5E-02	1
Zinc	1.35E+01	4.52E-02	0.00E+00	0.00E+00	9.47E-04	3.47E-03	4.96E-02	4.43E+00	1E-02	1

Appendix L7

Table L7-1. Chemical-Specific Exposure Factors - Tier 2 Soil Pathways

	Chemical	Tier 2, Step 3aBCFp	Tier 2, Step 3a BCFp Abbreviated Reference	Tier 2, Step 3a BCFi	Tier 2, Step 3a BCFi Abbreviated Reference
Dioxins					
	2,3,7,8-TCDD TEQ	6.89E-02	EPA, 2003	4.21E+00	Sample et al., 1998
Inorganic					
	Aluminum	1.80E-04	Strenge and Peterson, 19	3.40E-01	Beyer and Stafford, 1993
	Antimony	1.10E-02	Napier et al., 1980	9.90E-01	Mean of 12 Metals
	Beryllium	4.70E-04	Strenge and Peterson, 19	9.90E-01	Mean of 12 metals
	Cadmium	7.31E-01	Bechtel Jacobs Co. LLC,	8.91E+00	Sample et al., 1998
	Chromium	2.50E-04	Strenge and Peterson, 19	9.34E-01	Sample et al., 1998
	Copper	5.96E-01	Bechtel Jacobs Co. LLC,	1.26E+00	Sample et al., 1998
	Lead	1.02E-01	Bechtel Jacobs Co. LLC,	5.27E-01	Sample et al., 1998
	Mercury	1.69E+00	Bechtel Jacobs Co. LLC,	9.61E+00	Sample et al., 1998
	Nickel	6.35E-02	Bechtel Jacobs Co. LLC,	2.76E+00	Sample et al., 1998
	Selenium	4.76E-01	Bechtel Jacobs Co. LLC,	2.23E+00	Sample et al., 1998
	Vanadium	1.30E-03	Strenge and Peterson, 19	9.90E-01	Mean of 12 metals
	Zinc	9.55E-01	Bechtel Jacobs Co. LLC,	7.40E+00	Sample et al., 1998

Table L7-2. Chemical-Specific Exposure Factors - Tier 2 Sediment Pathways

	Chemical	Tier 2, Step 3a BCFp	Tier 2, Step 3a BCFp Abbreviated Reference	Tier 2, Step 3a BCFe	Tier 2, Step 3a BCFe Abbreviated Reference
Inorganic					
	Aluminum	1.80E-04	Strenge and Peter	3.40E-01	Beyer and Staffor
	Cadmium	1.15E+00	Bechtel Jacobs C	1.09E+01	Sample et al., 199
	Chromium	2.50E-04	Strenge and Peter	2.46E+00	Sample et al., 199
	Mercury	3.81E+00	Bechtel Jacobs C	4.60E+01	Sample et al., 199
	Nickel	8.35E-02	Bechtel Jacobs C	1.08E+01	Sample et al., 199
	Selenium	4.22E-01	Bechtel Jacobs C	5.31E+00	Sample et al., 199
	Vanadium	1.30E-03	Strenge and Peter	9.90E-01	Mean of 12 metal
	Zinc	1.52E+00	Bechtel Jacobs C	1.49E+01	Sample et al., 199

Appendix L8

Table L8-1. Ornate Shrew Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	9.99E-06	1.15E-07	0.00E+00	9.00E-06	9.11E-06	1.28E-06	7E+00	1
Mercury	3.54E-02	4.06E-04	0.00E+00	3.61E-02	3.65E-02	3.20E-01	1E-01	1
Beryllium	1.91E-01	2.19E-03	0.00E+00	3.62E-02	3.84E-02	4.80E-01	8E-02	1
Selenium	5.43E-01	6.23E-03	0.00E+00	1.37E-01	1.43E-01	5.46E-02	3E+00	1
Cadmium	6.99E-01	8.02E-03	0.00E+00	1.11E+00	1.12E+00	5.50E-01	2E+00	1
Antimony	2.10E+00	2.41E-02	0.00E+00	3.98E-01	4.22E-01	6.00E-02	7E+00	1
Copper	7.08E+00	8.13E-02	0.00E+00	1.25E+00	1.34E+00	2.95E+00	5E-01	1
Nickel	8.28E+00	9.50E-02	0.00E+00	2.31E+00	2.41E+00	1.67E-01	1E+01	1
Lead	8.89E+00	1.02E-01	0.00E+00	7.62E-01	8.64E-01	5.80E+00	1E-01	1
Chromium	1.09E+01	1.25E-01	0.00E+00	1.31E+00	1.44E+00	3.50E+03	4E-04	1
Vanadium	2.81E+01	3.23E-01	0.00E+00	5.32E+00	5.64E+00	1.14E+00	5E+00	1
Zinc	3.82E+01	4.38E-01	0.00E+00	4.13E+01	4.17E+01	1.05E+01	4E+00	1
Aluminum	1.02E+04	1.17E+02	0.00E+00	6.63E+02	7.80E+02	2.13E+00	4E+02	1

Table L8-2. Deer Mouse Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	9.99E-06	3.39E-08	5.83E-08	3.56E-06	3.66E-06	1.19E-06	3E+00	1
Aluminum	1.02E+04	3.46E+01	1.56E-01	2.94E+02	3.29E+02	1.98E+00	2E+02	1
Antimony	2.10E+00	7.12E-03	1.96E-03	1.76E-01	1.85E-01	6.00E-02	3E+00	1
Beryllium	1.91E-01	6.47E-04	7.61E-06	1.60E-02	1.67E-02	4.80E-01	3E-02	1
Cadmium	6.99E-01	2.37E-03	4.33E-02	5.28E-01	5.74E-01	5.50E-01	1E+00	1
Chromium	1.09E+01	3.69E-02	2.31E-04	8.63E-01	9.00E-01	3.25E+03	3E-04	1
Copper	7.08E+00	2.40E-02	3.58E-01	7.59E-01	1.14E+00	2.74E+00	4E-01	1
Lead	8.89E+00	3.01E-02	7.65E-02	3.97E-01	5.04E-01	5.80E+00	9E-02	1
Mercury	3.54E-02	1.20E-04	5.08E-03	2.88E-02	3.40E-02	2.97E-01	1E-01	1
Nickel	8.28E+00	2.81E-02	4.46E-02	1.93E+00	2.01E+00	1.55E-01	1E+01	1
Selenium	5.43E-01	1.84E-03	2.19E-02	1.03E-01	1.26E-01	5.07E-02	2E+00	1
Vanadium	2.81E+01	9.53E-02	3.10E-03	2.36E+00	2.46E+00	1.06E+00	2E+00	1
Zinc	3.82E+01	1.29E-01	3.09E+00	2.39E+01	2.72E+01	9.76E+00	3E+00	1

Table L8-3. Long-tailed Weasel Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	9.99E-06	1.82E-08	0.00E+00	0.00E+00	9.02E-10	1.46E-09	2.05E-08	1.02E-06	2E-02	1
Aluminum	1.02E+04	1.85E+01	0.00E+00	0.00E+00	9.15E-04	1.18E-03	1.85E+01	1.69E+00	1E+01	1
Antimony	2.10E+00	3.82E-03	0.00E+00	0.00E+00	1.03E-06	8.25E-07	3.82E-03	6.00E-02	6E-02	1
Beryllium	1.91E-01	3.47E-04	0.00E+00	0.00E+00	2.48E-08	3.25E-08	3.47E-04	4.80E-01	7E-04	1
Cadmium	6.99E-01	1.27E-03	0.00E+00	0.00E+00	1.70E-05	1.66E-05	1.30E-03	5.50E-01	2E-03	1
Chromium	1.09E+01	1.98E-02	0.00E+00	0.00E+00	4.01E-06	3.26E-06	1.98E-02	2.78E+03	7E-06	1
Copper	7.08E+00	1.29E-02	0.00E+00	0.00E+00	2.12E-05	1.33E-05	1.29E-02	2.34E+00	6E-03	1
Lead	8.89E+00	1.62E-02	0.00E+00	0.00E+00	2.71E-07	3.80E-07	1.62E-02	5.80E+00	3E-03	1
Mercury	3.54E-02	6.44E-05	0.00E+00	0.00E+00	6.32E-06	4.64E-06	7.53E-05	2.54E-01	3E-04	1
Nickel	8.28E+00	1.51E-02	0.00E+00	0.00E+00	3.72E-06	2.60E-06	1.51E-02	1.33E-01	1E-01	1
Selenium	5.43E-01	9.87E-04	0.00E+00	0.00E+00	2.35E-04	1.89E-04	1.41E-03	4.34E-02	3E-02	1
Vanadium	2.81E+01	5.11E-02	0.00E+00	0.00E+00	1.05E-05	1.33E-05	5.11E-02	9.05E-01	6E-02	1
Zinc	3.82E+01	6.94E-02	0.00E+00	0.00E+00	2.52E-03	2.03E-03	7.40E-02	8.35E+00	9E-03	1

Table L8-4. Mourning Dove Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-06	9.77E-09	3.37E-08	0.00E+00	4.34E-08	1.43E-05	3E-03	1
Aluminum	1.02E+04	2.82E+01	2.54E-01	0.00E+00	2.85E+01	1.10E+02	3E-01	1
Antimony	2.10E+00	5.82E-03	3.20E-03	0.00E+00	9.01E-03	6.00E-03	2E+00	1
Beryllium	1.91E-01	5.29E-04	1.24E-05	0.00E+00	5.41E-04	4.80E-02	1E-02	1
Cadmium	6.99E-01	1.94E-03	7.08E-02	0.00E+00	7.27E-02	1.60E+00	5E-02	1
Chromium	1.09E+01	3.02E-02	3.77E-04	0.00E+00	3.06E-02	1.00E+00	3E-02	1
Copper	7.08E+00	1.96E-02	5.85E-01	0.00E+00	6.04E-01	2.30E+00	3E-01	1
Lead	8.89E+00	2.46E-02	1.25E-01	0.00E+00	1.50E-01	1.60E+00	9E-02	1
Mercury	3.54E-02	9.80E-05	8.31E-03	0.00E+00	8.41E-03	3.90E-02	2E-01	1
Nickel	8.28E+00	2.29E-02	7.28E-02	0.00E+00	9.57E-02	1.38E+00	7E-02	1
Selenium	5.43E-01	1.50E-03	3.58E-02	0.00E+00	3.73E-02	2.30E-01	2E-01	1
Vanadium	2.81E+01	7.78E-02	5.06E-03	0.00E+00	8.29E-02	1.14E+01	7E-03	1
Zinc	3.82E+01	1.06E-01	5.05E+00	0.00E+00	5.16E+00	1.72E+01	3E-01	1

Table L8-5. Western Meadowlark Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-06	1.58E-08	1.34E-08	1.16E-06	1.18E-06	1.43E-05	8E-02	1
Aluminum	1.02E+04	4.56E+01	1.01E-01	3.26E+02	3.72E+02	1.10E+02	3E+00	1
Antimony	2.10E+00	9.40E-03	1.28E-03	1.95E-01	2.06E-01	6.00E-03	3E+01	1
Beryllium	1.91E-01	8.55E-04	4.96E-06	1.78E-02	1.86E-02	4.80E-02	4E-01	1
Cadmium	6.99E-01	3.13E-03	2.82E-02	5.85E-01	6.17E-01	1.60E+00	4E-01	1
Chromium	1.09E+01	4.88E-02	1.50E-04	9.57E-01	1.01E+00	1.00E+00	1E+00	1
Copper	7.08E+00	3.17E-02	2.33E-01	8.41E-01	1.11E+00	2.30E+00	5E-01	1
Lead	8.89E+00	3.98E-02	4.98E-02	4.41E-01	5.30E-01	1.60E+00	3E-01	1
Mercury	3.54E-02	1.58E-04	3.31E-03	3.20E-02	3.54E-02	3.90E-02	9E-01	1
Nickel	8.28E+00	3.71E-02	2.90E-02	2.14E+00	2.21E+00	1.38E+00	2E+00	1
Selenium	5.43E-01	2.43E-03	1.43E-02	1.14E-01	1.31E-01	2.30E-01	6E-01	1
Vanadium	2.81E+01	1.26E-01	2.02E-03	2.61E+00	2.74E+00	1.14E+01	2E-01	1
Zinc	3.82E+01	1.71E-01	2.01E+00	2.66E+01	2.87E+01	1.72E+01	2E+00	1

Table L8-6. Red-shouldered Hawk Soil Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
2,3,7,8-TCDD TEQ	3.53E-06	7.11E-09	0.00E+00	0.00E+00	2.49E-11	2.94E-10	7.42E-09	1.43E-05	5E-04	0.06
Aluminum	1.02E+04	2.05E+01	0.00E+00	0.00E+00	8.59E-05	1.11E-04	2.05E+01	1.10E+02	2E-01	0.06
Antimony	2.10E+00	4.23E-03	0.00E+00	0.00E+00	9.69E-08	7.75E-08	4.23E-03	6.00E-03	7E-01	0.06
Beryllium	1.91E-01	3.85E-04	0.00E+00	0.00E+00	2.33E-09	3.05E-09	3.85E-04	4.80E-02	8E-03	0.06
Cadmium	6.99E-01	1.41E-03	0.00E+00	0.00E+00	1.60E-06	1.56E-06	1.41E-03	1.60E+00	9E-04	0.06
Chromium	1.09E+01	2.20E-02	0.00E+00	0.00E+00	3.77E-07	3.06E-07	2.20E-02	1.00E+00	2E-02	0.06
Copper	7.08E+00	1.43E-02	0.00E+00	0.00E+00	1.99E-06	1.25E-06	1.43E-02	2.30E+00	6E-03	0.06
Lead	8.89E+00	1.79E-02	0.00E+00	0.00E+00	2.55E-08	3.57E-08	1.79E-02	1.60E+00	1E-02	0.06
Mercury	3.54E-02	7.13E-05	0.00E+00	0.00E+00	5.93E-07	4.36E-07	7.23E-05	3.90E-02	2E-03	0.06
Nickel	8.28E+00	1.67E-02	0.00E+00	0.00E+00	3.50E-07	2.44E-07	1.67E-02	1.38E+00	1E-02	0.06
Selenium	5.43E-01	1.09E-03	0.00E+00	0.00E+00	2.20E-05	1.77E-05	1.13E-03	2.30E-01	5E-03	0.06
Vanadium	2.81E+01	5.66E-02	0.00E+00	0.00E+00	9.85E-07	1.25E-06	5.66E-02	1.14E+01	5E-03	0.06
Zinc	3.82E+01	7.69E-02	0.00E+00	0.00E+00	2.37E-04	1.91E-04	7.74E-02	1.72E+01	4E-03	0.06

Appendix L9

Table L9-1. Ornate Shrew Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Mercury	6.00E-03	6.89E-05	0.00E+00	5.28E-02	5.28E-02	9.76E-01	5E-02	1
Selenium	1.70E-01	1.95E-03	0.00E+00	1.73E-01	1.75E-01	8.11E-02	2E+00	1
Cadmium	2.60E-01	2.98E-03	0.00E+00	5.43E-01	5.46E-01	3.05E-01	2E+00	1
Nickel	2.80E+00	3.21E-02	0.00E+00	5.79E+00	5.82E+00	4.64E-01	1E+01	1
Chromium	4.40E+00	5.05E-02	0.00E+00	2.07E+00	2.12E+00	1.07E+04	2E-04	1
Zinc	1.35E+01	1.55E-01	0.00E+00	3.84E+01	3.86E+01	1.58E+01	2E+00	1
Vanadium	1.39E+01	1.60E-01	0.00E+00	2.63E+00	2.79E+00	3.48E+00	8E-01	1
Aluminum	3.05E+03	3.50E+01	0.00E+00	1.98E+02	2.33E+02	3.33E+00	7E+01	1

Table L9-2. Deer Mouse Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	1.03E+01	4.65E-02	8.79E+01	9.83E+01	2.22E+00	4E+01	1
Cadmium	2.60E-01	8.81E-04	2.52E-02	2.41E-01	2.67E-01	2.04E-01	1E+00	1
Chromium	4.40E+00	1.49E-02	9.32E-05	9.17E-01	9.32E-01	7.15E+03	1E-04	1
Mercury	6.00E-03	2.03E-05	1.94E-03	2.34E-02	2.53E-02	6.53E-01	4E-02	1
Nickel	2.80E+00	9.49E-03	1.98E-02	2.56E+00	2.59E+00	3.10E-01	8E+00	1
Selenium	1.70E-01	5.76E-04	6.08E-03	7.65E-02	8.32E-02	5.42E-02	2E+00	1
Vanadium	1.39E+01	4.71E-02	1.53E-03	1.17E+00	1.21E+00	2.32E+00	5E-01	1
Zinc	1.35E+01	4.58E-02	1.74E+00	1.70E+01	1.88E+01	1.05E+01	2E+00	1

Table L9-3. Long-tailed Weasel Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	5.54E+00	0.00E+00	0.00E+00	1.53E-05	1.27E-05	5.54E+00	9.34E-01	6E+00	0.0558
Cadmium	2.60E-01	4.73E-04	0.00E+00	0.00E+00	4.42E-07	3.18E-07	4.73E-04	8.58E-02	6E-03	0.0558
Chromium	4.40E+00	8.00E-03	0.00E+00	0.00E+00	2.32E-07	1.85E-07	8.00E-03	3.00E+03	3E-06	0.0558
Mercury	6.00E-03	1.09E-05	0.00E+00	0.00E+00	2.63E-07	1.92E-07	1.14E-05	2.74E-01	4E-05	0.0558
Nickel	2.80E+00	5.09E-03	0.00E+00	0.00E+00	2.69E-07	2.12E-07	5.09E-03	1.30E-01	4E-02	0.0558
Selenium	1.70E-01	3.09E-04	0.00E+00	0.00E+00	8.62E-06	6.36E-06	3.24E-04	2.28E-02	1E-02	0.0558
Vanadium	1.39E+01	2.53E-02	0.00E+00	0.00E+00	2.90E-07	2.34E-07	2.53E-02	9.76E-01	3E-02	0.0558
Zinc	1.35E+01	2.45E-02	0.00E+00	0.00E+00	9.74E-05	7.02E-05	2.47E-02	4.43E+00	6E-03	0.0558

Table L9-4. Mourning Dove Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	8.45E+00	7.60E-02	0.00E+00	8.52E+00	1.10E+02	8E-02	1
Cadmium	2.60E-01	7.20E-04	4.12E-02	0.00E+00	4.20E-02	1.60E+00	3E-02	1
Chromium	4.40E+00	1.22E-02	1.52E-04	0.00E+00	1.23E-02	1.00E+00	1E-02	1
Mercury	6.00E-03	1.66E-05	3.16E-03	0.00E+00	3.18E-03	3.90E-02	8E-02	1
Nickel	2.80E+00	7.75E-03	3.24E-02	0.00E+00	4.01E-02	1.38E+00	3E-02	1
Selenium	1.70E-01	4.71E-04	9.94E-03	0.00E+00	1.04E-02	2.30E-01	5E-02	1
Vanadium	1.39E+01	3.85E-02	2.50E-03	0.00E+00	4.10E-02	1.14E+01	4E-03	1
Zinc	1.35E+01	3.74E-02	2.84E+00	0.00E+00	2.87E+00	1.72E+01	2E-01	1

Table L9-5. Spotted Towhee Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	1.78E+01	5.35E-02	1.01E+02	1.19E+02	1.10E+02	1E+00	0.18
Cadmium	2.60E-01	1.52E-03	2.90E-02	2.77E-01	3.07E-01	1.60E+00	2E-01	0.18
Chromium	4.40E+00	2.57E-02	1.07E-04	1.05E+00	1.08E+00	1.00E+00	1E+00	0.18
Mercury	6.00E-03	3.51E-05	2.23E-03	2.69E-02	2.91E-02	3.90E-02	7E-01	0.18
Nickel	2.80E+00	1.64E-02	2.28E-02	2.95E+00	2.99E+00	1.38E+00	2E+00	0.18
Selenium	1.70E-01	9.94E-04	6.99E-03	8.80E-02	9.60E-02	2.30E-01	4E-01	0.18
Vanadium	1.39E+01	8.13E-02	1.76E-03	1.34E+00	1.42E+00	1.14E+01	1E-01	0.18
Zinc	1.35E+01	7.89E-02	2.00E+00	1.96E+01	2.16E+01	1.72E+01	1E+00	0.18

Table L9-6. Red-shouldered Hawk Sediment Pathway, Anomaly Area 3, Tier 2, Step 3A

Chemical	Exposure Concentration (mg/kg)	Soil Ingestion (mg/kg-day)	Plant Ingestion (mg/kg-day)	Invertebrate Ingestion (mg/kg-day)	Mouse Ingestion (mg/kg-day)	Shrew Ingestion (mg/kg-day)	Ingestion Sum (mg/kg-day)	TRV (mg/kg-day)	HQ	Site Use Factor
Aluminum	3.05E+03	6.14E+00	0.00E+00	0.00E+00	8.28E-06	6.90E-06	6.14E+00	1.10E+02	6E-02	0.02
Cadmium	2.60E-01	5.24E-04	0.00E+00	0.00E+00	2.40E-07	1.72E-07	5.24E-04	1.60E+00	3E-04	0.02
Chromium	4.40E+00	8.86E-03	0.00E+00	0.00E+00	1.26E-07	1.00E-07	8.86E-03	1.00E+00	9E-03	0.02
Mercury	6.00E-03	1.21E-05	0.00E+00	0.00E+00	1.42E-07	1.04E-07	1.23E-05	3.90E-02	3E-04	0.02
Nickel	2.80E+00	5.64E-03	0.00E+00	0.00E+00	1.46E-07	1.15E-07	5.64E-03	1.38E+00	4E-03	0.02
Selenium	1.70E-01	3.42E-04	0.00E+00	0.00E+00	4.67E-06	3.44E-06	3.50E-04	2.30E-01	2E-03	0.02
Vanadium	1.39E+01	2.80E-02	0.00E+00	0.00E+00	1.57E-07	1.27E-07	2.80E-02	1.14E+01	2E-03	0.02
Zinc	1.35E+01	2.72E-02	0.00E+00	0.00E+00	5.28E-05	3.80E-05	2.73E-02	1.72E+01	2E-03	0.02

Appendix L10

Document Title:

(1) Draft Screening Ecological Risk Assessment, Removal Site Evaluation, Anomaly Area 3, Former Marine Corps Air Station, El Toro, dated May, 2003

Reviewer: Mr. Andrew R. Yuen and Ms. Judy Gibson, United States Department of the Interior, Fish and Wildlife Service, 04 August 2003

Comment No.	Section/ Page No.	Comment	Response
SPECIFIC COMMENTS			
1.		Overall, we agree that based on the Screening Ecological Risk Assessment (SERA) a Baseline Ecological Risk Assessment (BERA) is warranted for Site AA 3. Model assumptions and calculations included in the document to support the conclusions reached in the SERA were helpful in reviewing the document. Our specific comments regarding the SERA are provided below.	Comment Noted.
SPECIFIC COMMENTS			
1.	Appendix B, Page 2.	We agree as acknowledged in the biological site reconnaissance (BSR) report that a single midwinter survey conducted to determine the species inventory for Site AA 3 is not likely to have captured all of the ecological receptors and representative feeding guilds present on site. Migratory birds may not be present at the site, plants may not be identifiable, and animals may be inactive at this time of the year. For your reference, we have attached a list of species observed on the former MCAS El Toro during a 1993 survey effort by the Service (U.S. Fish and Wildlife Service 1993). As discussed later in this letter, this list includes species such as the loggerhead shrike (*Lanius ludovicianus*), which occupies a higher trophic level and should be evaluated as a potential receptor.	A spring/summer habitat assessment was performed at AA 3 to identify plant and wildlife species that were not identified during the mid-winter survey. This data along with the species list for the entire facility was reviewed and used in selecting representative species. Based on the site habitat characteristics and the results of the two biological surveys, it was determined that the Loggerhead shrike is not likely to utilize the site on a regular basis. The red-shouldered hawk was selected as a representative raptor.
2.	Pages 3-7 and 3-8	We support the use of chemicals of potential ecological concern (COPECs) detected in surface soils at a depth of 0-1 foot below ground surface (bgs) in the ecological risk assessment. However, it is inappropriate to eliminate chemicals detected at depths greater than 1 foot bgs when evaluating COPECs for the SERA when ecological receptors occurring at Site AA 3 can burrow vertically to greater depths. For example, the California ground squirrel (*Spermophilus beecheyi*), known to occur on-site, can burrow up to depths of five feet (California Department of Toxic Substances Control (DTSC) 1998). In addition to the biotic zone, contaminants present at the depth profile to which species at the site may burrow should also be evaluated in the SERA. Please refer to the DTSC's recommended depths for soil sampling to	The COPECs from 0 – 1 feet bgs for the Ecological Risk Assessment will be revised to include all COPECs identified at depths ranging from 0 – 6 feet bgs. Comment Noted.

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Comment No.	Section/ Page No.	Comment	Response
		set exposure point concentration for burrowing mammals and burrow-dwelling birds in an ecological risk assessment (California DTSC 1998).	
3.	Page 3-7	Based on the disposal history and the uncertainty of the wastes disposed at Site AA 3, we recommend that polychlorinated biphenyls (PCBs), and herbicides/pesticides be included in the list of COPECs selected for evaluation of the SERA. Site 3 was a former landfill. Reported wastes that could potentially be found in the Site 3 landfill include metals, incinerator ash, solvents, paint residues, hydraulic fluids, engine coolants, construction debris, oily wastes, and municipal solid wastes (U.S. Marine Corps 1999).	Pesticides and herbicides were not considered to be COPECs since the site was predominantly used for debris disposal. The suite of analysis that was used in the investigation was presented in the approved RSE Work Plan. The IRP Site 3 Draft Phase II RI report (BNI 1996) summarized the soil sampling results from Phase I RI, RFA and Phase II RI in order to provide COPC lists for the shallow (0 - 10 feet bgs) and subsurface (greater than 10 feet bgs) soils. The COPC list did not include pesticides/herbicide/PCBs for Unit 1, Unit 3 and Unit 4 (of the site even though they were low detections of few pesticides and herbicide compounds, since the concentrations of these compounds did not exceed their respective residential PRGs). Therefore, the sample analysis suite for AA 3 RSE investigation did not include herbicides, pesticides and PCBs.
4.	Page 3-9, Table 3-3	The unit of concentration for dioxins given in the table is "pg/g"; however, the footnote defines the unit of concentration as picograms per kilogram (pg/kg). The unit identified in the footnote should be consistent with the unit provided in the table.	Comment Noted and corrections were made as suggested.
5.	Page 3-10	Table 3-4 describes the assessment endpoint for mammals and birds as a decline in mammal populations and decline in local bird populations, respectively. Please explain the use of this assessment endpoint for mammals and birds when decrease in growth and reproduction was used as an assessment endpoint for invertebrates. The coastal California gnatcatcher (*Polioptila californica californica*) is a federally threatened species and is present at the site. In order to assess risk to the gnatcatcher, we recommend using individual-level endpoints (e.g., feeding behavior, survival, growth, and/or reproduction), rather than population-level endpoints (decline in local bird populations).	As described in Section 3.3, survival, growth and reproduction of birds and mammals are the SERA assessment endpoints used. These assessment endpoints are based on NOAEL measures of effect, thus individuals are protected. The table description was modified to be consistent with the text. The amount of good gnatcatcher habitat on the landfill site is very small compared to the area of habitat located in the surrounding hills. Also, the gnatcatcher feeds mainly on flying insects and not ground-dwelling insects. The spotted towhee and western meadowlark selected

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Comment No.	Section/ Page No.	Comment	Response
			The spotted towhee and western meadowlark, selected as representative species, have feeding habits leading to greater soil exposure than the gnatcatcher. The selected species represent a more conservative exposure scenario than the gnatcatcher.
6.	Page 3-12	The following types of ecological receptors and feeding guilds are present at the former El Toro MCAS: terrestrial, plants, soil invertebrates, reptiles, amphibians, terrestrial mammals (herbivores, omnivores, and carnivores), and terrestrial birds (herbivores, omnivores, and carnivores). Representative species or taxa should be evaluated as target receptors from each guild for the SERA. The Service agrees that the selected species for the SERA represent the two feeding guilds for omnivorous mammals and omnivorous birds for the site, We recommend that other target receptors be included to represent additional potentially exposed feeding guilds and higher trophic levels likely present at the site. For example, carnivorous birds, such as the logger head shrike present at El Toro MCAS likely inhabits the Site AA 3. The shrike is a top predator and can devour large insects, reptiles, small mammals should also be evaluated in the SERA. The California ground squirrel is primarily a herbivorous mammal that can burrow to a depth greater than five feet and should be evaluated as a target receptor exposed to contaminants in deeper soils. Please consider expanding the target receptors to evaluate risk to all feeding guilds and higher trophic levels that have potentially complete pathways of exposure to contaminants at the site.	The list of representative species has been expanded to include more feeding guilds: A herbivorous bird and mammal, an insectivorous bird and mammal, and a predatory bird and mammal, in addition to lower trophic level receptors. Attached Tables 1 and 2 provide the representative species list for the SERA and the BERA. The use of the deer mouse (small body size), in combination with the assumption that it can burrow to a depth of 6 feet, is a more conservative exposure scenario than using the much larger California ground squirrel. By assuming that the deer mouse can burrow to a depth of 6 feet, the risk assessment goals for recommending the use of the ground squirrel are met and exceeded.
7.	Page 3-17	Figure 3-1 identifies the subsurface soil as an incomplete pathway. The subsurface soil pathway should be identified as a complete pathway for certain ecological receptors. As stated above, burrowing mammals may come in contact with and be exposed to COPECs in subsurface soils.	The Conceptual Site Model was revised to include soil down to a depth of 6 feet as a complete pathway due to the presence of burrowing animals. This will overestimate the exposure of other organisms at the site that do not have access to deep soils.
8.	Page 4-1	It is stated that maximum surface soil concentrations of aluminum, chromium, lead, selenium, vanadium, and zinc exceed plant and invertebrate screening concentrations. The Hazard Quotients (HQ) for these chemicals are greater than one and may potentially have an adverse effect on ecological receptors. It is further stated that eleven semivolatile organic compounds (SVOCs) and dioxins detected in surface soil did not have screening benchmarks for plants and invertebrates. Table 4-1 lists thirteen SVOCs that did not have	A sentence was added to the uncertainty section to clarify the potential risks posed by certain SVOCs and dioxins to plants and invertebrates due to lack of relevant effects levels.

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Comment No.	Section/ Page No.	Comment	Response
		screening benchmark concentrations. Please revise and add a sentence to clarify that the potential risks posed by certain SVOCs and dioxins are unknown for plants and invertebrates due to lack of relevant effects levels.	
9.	Table A-3	Preliminary Remediation Goals (PRGs) are human health risk-based concentrations; therefore, PRGs are not appropriate for ecological receptors.	Reference to human health PRGs was deleted from the Table A-3.
10.	Table B-2	Status of the coastal California gnatcatcher should be identified as federally threatened.	Comment noted and Table B-2 was revised to identify California gnatcatcher as federally threatened species.
11.	Appendix C-3	In addition to soil to earthworm bioconcentration factors (BCF) from Beyer and Stafford (1993), BCFs from additional peer reviewed references should be considered for use in Appendix C. The soil –to-earthworm uptake factors for cadmium, lead, chromium, and dioxins may be as high as 190, 228.26, 11.42, and 42.07, respectively (Sample et al. 1999). The mean soil-to-earthworm uptake factors for cadmium, lead, chromium, and dioxins in earthworms reported by Sample et al. (1999) are 17.10, 3.34, 1.10, and 11.74. Median soil-to-earthworm uptake factors for cadmium and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) reported by Sample et al. (1999) are 7.71 and 11.01, respectively. The lower BCFs used in Appendix C-3 for some of the metals and dioxins may underestimate the risk to ecological receptors at Site AA 3. At a minimum, the higher median BCFs reported in the literature should be used in the SERA.	The median BCF values for Cadmium and 2,3,7,8-TCDD from Sample et al., 1999 were used to replace the old lower values for uptake modeling.

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(2) Comments on Draft Screening Ecological Risk Assessment, Removal Site Evaluation, Anomaly Area 3, Former Marine Corps Air Station, El Toro Reviewer: Ms. Sonce DeVries, Environmental Protection Agency, 17 June 2003

(3) Responses to Navy's Responses to EPA Comments dated 17 June 2003. Mail Correspondence: Subject – Ecological Issues at Anomaly Area 3 and IRP Site 1 at the Former MCAS El Toro. *Reviewer: Ms. Nicole Moutoux, Project Manager, Environmental Protection Agency, Dated 18 September 2003*

Comment No.	Section/ Page No.	Comment	Response
I. General Comments on the Draft Screening ERA for AA 3			
Please note that comments on the Draft Screening ERA for AA 3 were provided by the U.S. Fish and Wildlife Service (August 4, 2003 letter to Mr. Andy Piskin, Department of the Navy from Andrew Yuen, US Fish and Wildlife Service). Response to these comments should be provided and in particular, the following issues should be addressed.			
1.		It is inappropriate to eliminate chemicals detected at depths greater than 1 foot bgs. The California ground squirrel can burrow up to five feet. We suggest that the Navy refer to DTSC's recommended depths for soil sampling to set exposure point concentrations for burrowing mammals and burrow dwelling birds in an ecological risk assessment. As per our June 10, 2003 BCT meeting minutes, we agreed that exposure to soil depths of 0-6 feet bgs would be evaluated. The conceptual site model should be revised to show that the subsurface may be a complete pathway for certain ecological receptors.	The exposure depth for soil has been changed to include all samples between the ground surface to 6 feet bgs. The conceptual site model is revised to show that complete pathway exists for certain ecological receptors, such as burrowing mammals, to come into contact with soil from 0-6 feet bgs. This will overestimate the exposure of other organisms at the site that do not have access to deep soils.
2.		More justification for the elimination of pesticides, herbicides and PCBs as COPECs at AA 3 must be provided. Please keep in mind that although these chemicals were below human health based PRGs during earlier studies they may still pose an ecological risk. At a minimum, any data regarding these chemicals should be presented.	Consistent with the approved work plan, pesticides, herbicides, and PCBs were not considered to be COPECs. Data collected during this RSE investigation strongly does not indicate anthropogenic influence. Therefore, there is low likelihood that these chemical groups are present at the site. As requested in Specific Comment #5, data from the Site 3 investigations is presented at the end of this document.
3.		Special status species should be protected at the individual level rather than at population-level endpoints.	For the SERA, all TRVs are adjusted to NOAEL equivalents, so protection is at the individual level.

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Comment No.	Section/ Page No.	Comment	Response
			For the BERA, LOAEL-based TRVs may be used to assess non-endangered species populations.
4.		Bioaccumulation factors (BAFS) should be updated to include soil-to-earthworm BAFs for metals and dioxins reported by Sample et.al., (1999), and soil-to-plant and soil-to-small mammal BAFs for inorganics and organics provided by US EPA (2000; http://www.epa.gov/ecotox/ ecossl/ SOPs.htm).	Soil-to-earthworm BAFs for metals and dioxins reported by Sample et. al are currently included in the model used to calculate hazard quotients for this SERA. Soil-to-plant BAFs for inorganics and organics provided by US EPA (2000; http://www.epa.gov/ecotox/ ecossl/ SOPs.htm) have been updated. Soil-to-mammal BAFs are not used due to the inherent uncertainty associated with estimating soil-to-small mammal BAFs.

II. Response to the "Response to Review Comments" (responses to the Navy's response to US EPA comments on the Draft Screening ERA for AA 3), dated 17 June 2003

GENERAL COMMENTS

EPA Response to Navy response to General Comment **#1**		**EPA Response to Navy response to General Comment #1** Response accepted.	**Navy response** Noted.
EPA General Comment **#1** and Navy response		**EPA General Comment #1** A single midwinter survey does not yield a conservative estimate of the actual biota on site, particularly with regard to special status plants which can only be identified through the flowers and biota nesting and feeding young. A spring and early summer survey would be much	**Navy response** A spring/summer habitat assessment ~~will be~~ was performed at AA 3 to provide a more comprehensive evaluation of plant and wildlife species. This data along with the species list for the entire facility ~~will be~~ was

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Comment No.	Section/ Page No.	Comment	Response
		better particularly since some threatened and endangered species are listed as potentially or actually occurring on site.	reviewed and used in selecting additional representative species.
SPECIFIC COMMENTS			
EPA Response to Navy response to Specific Comment **#1**		**EPA Response to Navy response to Specific Comment #1** Response accepted.	**Navy response** Noted.
EPA Specific Comment **#1** and Navy response	Page 3-5, Table 3-2	**EPA Specific Comment #1** Wildlife Species Observed or Likely to Occur in the Area of AA3 - what is the meaning of the Status (3,4) column?	**Navy response** The notes for this table were inadvertently left out. They will be added to the Draft Final version of the report. (1) Nomenclature from American Ornithologists' Union (1983); Collins (1990); Jones, et al. (1982). (2) Habitat acronyms: CHP - chaparral; W - woodland; RSS - sage scrub; G - non-native grassland; RP - riparian; D - disturbed; DEV - developed.

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Comment No.	Section/ Page No.	Comment	Response
			(3) Status acronyms: B - breeding on site; V - visitor, migrant, or transient; W - winter observation. (4) † = Sensitive species.
EPA Response to Navy response to Specific Comment **#2**		**EPA Response to Navy response to Specific Comment #2** The response is confusing in that it says "there is no coastal sage scrub on site or down-gradient of the site". Please see the map in the draft at Appendix B, Figure B-1 which shows both mulefat and mixed sage scrub and see the text on pages 3-6 and 3-7 which says " a small amount of the CSS, in the form of mixed sage scrub grassland (0.18 acres) is within the limits of AA 3..." and "There is a very limited area of this habitat (mulefat scrub) on site...". Therefore, according to the Navy's document, both of these habitats occur on site. The Navy needs to clarify whether or not there is coastal sage scrub and mulefat habitat within the boundaries of AA 3. However, the thrust of the EPA comment was that if there is such habitat either within or close to AA 3, thee is a possibility there are sensitive species nearby which may forage on site and they must be considered in the risk assessment.	**Navy response** Open patches of Mulefat scrub extend onto the project site in a few areas along the southeastern boundary. The area of Mulefat Scrub within AA 3 is 0.08 acre. Degraded CSS, mixed with non-native grassland, occurs on a fill slope to the east, crossing the northeastern corner of the site and extending offsite to the south and southeast. The limited area of habitat that the Mulefat scrub and CCS occupy onsite suggests that species that require this habitat are unlikely to utilize the ruderal vegetation found on the site for feeding or nesting. Thus, they are less likely to be exposed to site contamination. However, the selected representative species will be assessed on an individual basis as a conservative approach.
EPA Specific Comment **#2** and Navy response	Page 3-6, Section 3.1.3	**EPA Specific Comment #2** Sensitive Resources: The Navy describes the occurrence of mulefat scrub and coastal sage scrub in and adjacent to the site. Both are of	**Navy response** Comment Noted.

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Comment No.	Section/ Page No.	Comment	Response
response	3.1.3	special significance since they support threatened and endangered species. While it is understood there is very little of this habitat actually on site, the fact that it does exist there and close by means that it may be attracting and supporting these sensitive species. That means those species are more likely to be breeding and feeding on the site and must be addressed on an individual basis during the SERA. It should not be considered of "limited significance".	~~A riparian~~ Riparian habitat (mulefat scrub) and coastal sage scrub ~~species~~ habitat were delineated as part of ~~delineation activity will be performed along with~~ the spring/summer habitat assessment. A record of all the plant and wildlife species that these ~~riparian~~ habitats supports was developed ~~will be maintained~~ during the assessment. ~~The results of this riparian habitat delineation and habitat assessment, including the type of and number of species that are attracted and supported by this riparian habitat and the number of individual species that are breeding and feeding on the site will be presented in the Draft Final version of the report for your comments and review.~~ Open patches of Mulefat scrub extend onto the project site in a few areas along the southeastern boundary. The area of Mulefat Scrub within AA 3 is 0.08 acre. Degraded CSS, mixed with non-native grassland, occurs on a fill slope to the east, crossing the northeastern corner of the site and extending offsite to the south and southeast. ~~Also, the fact that there is no coastal sage scrub on site or down gradient of the site.~~ The limited area of habitat that the Mulefat scrub and CCS occupy onsite suggests that species that require this habitat are unlikely to utilize the ruderal vegetation found on the site for feeding or nesting. Thus they are less likely to be exposed to site

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Comment No.	Section/ Page No.	Comment	Response
			contamination. However, the selected representative species will be assessed on an individual basis as a conservative approach.
EPA Response to Navy response to Specific Comment **#3**		**EPA Response to Navy response to Specific Comment #3** Response accepted.	**Navy response** <u>Noted.</u>
EPA Specific Comment **#3** and Navy response	Page 3-7, Section 3.1.3	**EPA Specific Comment #3** Potential Wetlands and Waters of the United States: With regard to the wetland, its jurisdictional status has nothing to do with ecological significance.	**Navy response** Comment Noted. The reference to jurisdictional status of potential wetlands and water of United States ~~will be~~ <u>has been</u> removed from the text.
EPA Response to Navy response to Specific Comment **#4**		**EPA Response to Navy response to Specific Comment #4** As noted in Specific Comments #2 above, the Navy must clarify whether there are sensitive habitats on site or close to the site and include in the risk assessment the species which may be found nesting and feeding in this sensitive habitat.	**Navy response** <u>A limited area of sensitive habitats (Mulefat scrub and CSS) exist on site and close to the site.</u>
EPA Specific Comment **#4** and Navy response	Page 3-7, Section 3.1.2	**EPA Specific Comment #4** <u>Wildlife:</u> Please clarify whether the sensitive species occur on site or not according to the survey. Each is listed on Table 3-2 as if they were observed on site.	**Navy response** The Notes at the bottom of the table state that the species with "***" are likely to occur at the site.

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			The habitat on site is ruderal in an early successional state. Only species that utilize such disturbed habitat are expected to use the site regularly. Since there is better habitat in the area (mixed sage scrub and riparian mulefat scrub), the sensitive species that require or prefer these habitats are likely attracted away from regular use of the site. The report text ~~will be~~ was revised to include species identified in the spring/early summer survey. Those species likely to forage or nest on the site ~~will be~~ are distinguished from those likely to utilize the better adjacent habitats.
EPA Response to Navy response to Specific Comment **#5**		**EPA Response to Navy response to Specific Comment #5** The response is accepted contingent on the Navy providing supporting evidence that the previous sampling was sufficient to assure that pesticides/herbicides are not a consideration on this site. Please present a map showing sampling locations on Site 3 to, the sample results, and discussion of the sampling and the data. We understand the BCT approved the draft (Final) RSE work plan and the COPECs included. However, given that such landfills frequently included miscellaneous debris not found on any manifest, a conservative eco risk assessment includes a full spectrum analytical scheme regardless of what was found in other landfills in the area.	**Navy response** Data to support the elimination of these COPECs is presented at the end of this document. In addition, trenching data shows that predominantly inert construction debris was placed at this site.
EPA Specific Comment **#5**	Page 3-7,	**EPA Specific Comment #5**	**Navy response**

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and Navy response	Section 3.2	Identification of Chemicals of Potential Ecological Concern: Given there is no way to know exactly what may have been disposed of at this site, please justify why pesticides and herbicides were not included in the screening.	Previous investigation at AA 3 (subsurface soil sampling during trenching) did not include pesticides and herbicides in the sampling analysis suite. The suite of analysis that was used in the RSE investigation was presented in the Draft RSE Work Plan and was approved by the BCT members. ~~And,~~ Also, pesticides and herbicides were not considered to be COPECs since the site was predominantly used for debris disposal. AA 3 ~~site~~ is associated with ~~the~~ IRP Site 3 per the personnel interview records (construction debris generated during the construction of the investigation-derived waste management area at IRP Site 3 were disposed of at AA 3 site). The shallow and subsurface soil sampling analysis suite for Phase I and II RI of IRP Site 3 included pesticides and herbicides. An evaluation of the soil sampling results indicated that even though ~~they~~ there were low detections of few pesticides and herbicide compounds, their concentrations did not exceed their respective background concentrations ~~residential PRGs~~. Herbicides and pesticides were not considered chemicals of potential concern for Unit 1, Unit 3 and Unit 4 of the IRP Site 3. Therefore, the sample analysis suite for AA 3 RSE investigation did not include herbicides and pesticides.

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EPA Response to Navy response to Specific Comment **#6**		**EPA Response to Navy response to Specific Comment #6** Response accepted.	**Navy response** Noted.
EPA Specific Comment **#6** and Navy response	Page 3-8, Table 3-3	**EPA Specific Comment #6** Maximum COPEC Concentrations Detected in Surface Soil: Please explain the meaning of the distinction between dioxins (bird) and dioxins (mammal).	**Navy response** The distinction between the dioxin (bird) and dioxin (mammal) values is the use of bird- and mammal-specific Toxicity Equivalency Factors (TEF) to calculate specific bird and mammal 2.3.7.8-TCDD toxicity equivalency quotients (TEQs). These bird and mammal TEFs are from Van den Berg et al., 1998. A footnote ~~will be~~ was added to Table 3-3 explaining that the maximum concentrations for bird and mammal were calculated based on TEFs for birds and mammals, respectively. A discussion was added to the uncertainty section regarding the use of Bird TEFs for food-chain intake estimations.
EPA Response to Navy response to Specific Comment **#7**		**EPA Response to Navy response to Specific Comment #7** **Navy Response paragraph 1**: Since the reviewers of this document were not a party to the discussions regarding methodology in this response, please provide either meeting minutes or at a minimum a date as well as who was present for the discussions with EPA Region 9	**Navy response** This comment has been addressed.

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		concerning the methodology to be used to estimate the risk-based soil benchmark concentrations for higher trophic level receptors. **Navy response paragraphs 2 and 3**: No response required. We understand that the BTAG TRVs are doses, not soil concentrations but we do not agree that using soil concentrations as doses is not "appropriate". EPA Guidance (EPA, 1997) includes this method as one of the possible methods for calculating HQs. It is a method which may be used during the preliminary screening when site-specific data sufficient to calculate doses for the appropriate receptors is not available. It is understood this is very conservative and the assumption is made that better site-specific data can be provided during the BERA when exposure is calculated. **Navy response paragraph 6**: We do not agree that "if the SBC is exceeded (HQ>1), further evaluation **may** (emphasis added) be required." If the HQ is greater than 1, further evaluation is **always** required.	Noted. **Navy response paragraph 6:** Text revised to state "...further evaluation is required."
EPA Specific Comment **#7** and Navy response	Page 3-9, Section 3.3	**EPA Specific Comment #7** Assessment Endpoints: The calculation of food chain based ecological soil benchmark concentrations should be reserved for the BERA when everyone has agreed on the need for these calculations and has discussed the specific inputs. It is customary in the SERA to perform the screening by simply comparing the soil concentration of the contaminant to the Navy/BTAG TRV unless actual on-site data exists for computing BCFs.	**Navy response** The revised estimates of ~~methodology that was used to estimate the~~ ecological risk ~~based soil benchmark concentrations (SBCs)~~ for higher trophic level ecological receptors ~~is based on previous discussions with EPA Region IX~~ was revised based on hazard quotient calculations. The Navy TRVs are acceptable doses (mg/kg-day)

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			based on laboratory toxicity studies. They are not soil benchmark concentrations (mg/kg soil) and it is not appropriate to compare soil concentrations to doses. Comparing only to lower trophic level soil benchmarks ignores food chain risks. The bioconcentration values (plant root uptake from soil – BCFp and earthworm uptake from soil – BCFi) ~~that were used in the calculation of the SBCs were derived from peer reviewed toxicology literature~~ were updated per comment General comment #4 of this document. Appendix C3 presents the BCF values. ~~Since the EPA and the Navy guidance documents for conducting Tier 1 screening ecological risk assessments (SERA) recommend the use of existing data and literature, the BCFi and BCFp values were used.~~ ~~These SBCs were~~ HQs were calculated using the EPA EcoSSL TRVs ~~published~~ (i.e., BTAG TRV-lows) (Appendix C4-1) and the representative species specific values of minimum body weight, maximum food intake, a diet consisting entirely of the presumed most contaminated fraction (soil invertebrates), and assuming site use factor (SUF) ~~and hazard quotient of 1~~. If the ~~SBC (dependent on BTAG TRV values)~~ HQ for a COPEC at the site ~~is not exceeded~~ does not exceed 1 ~~by COPEC maximum concentration (this comparison is equivalent to the HQ method)~~, further evaluation is not

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			required. Conversely, if ~~SBC~~ the HQ ~~is exceeded (HQ>1),~~ 1 or greater, further evaluation ~~may be~~ is required. Therefore, even though this process may seem extraneous in the SERA, it is in fact a comparison ~~with the Navy/BTAG~~ of conservative TRV values specific for representative species with the site soil COPEC ~~concentrations~~ chronic daily intake.
EPA Response to Navy response to Specific Comment **#8**		**EPA Response to Navy response to Specific Comment #8** No response required. We understand that the selection of the representative species is required to convert TRVs into screening values if the Navy chooses to include Tier 2 exposure estimates in the Tier 1 screening. Selection of target receptors is not necessary to perform the type of screening where the low TRV is simply compared to the COPEC concentration. This does not apply to the bioaccumulative compounds where it would be appropriate to estimate the risk to higher trophic level receptors in Tier 1. We also agree that the factors described in Section 3.4 are appropriate and conservative with the exception of the discussion regarding the elimination of the red-tailed hawk as a target receptor. Use of a higher trophic-level receptor such as the hawk with a small home range in the screening guarantees the process will be properly conservative. We do note for this site that using another receptor such as the logger head shrike (which has been observed in the area) would be more	**Navy response** Noted.

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		conservative in that the home range would be much smaller.	
EPA Specific Comment **#8** and Navy response	Page 3-11, Section 3.4	**EPA Specific Comment #8** Selection of Representative Species: The selection of representative species is probably premature at this point. As noted above, one mid-winter survey does not provide a conservative estimate of on-site species. In addition, the discussion concerning the use of raptors seems to miss the point of screening. The use of the raptor does not "defeat the purpose of screening" as stated in the text. If the raptor is screened against the site and no risk is detected, then we may be confident there is no risk.	**Navy response** Representative species are required to ~~convert TRVs doses~~ calculate chronic daily intake in order to calculate hazard quotients. The selection of the representative species for the SERA was based on conservative factors described in Section 3.4 of the report and exposure assumptions provided in the response to comment 7. ~~However, t~~This list of representative species ~~list~~ was ~~is being~~ revised to include more species from various feeding guilds. The results of the spring/summer survey ~~will also be~~ were used to help identify appropriate representative species. Special status species in the area of the site include the cactus wren and the coastal California gnatcatcher, both species that utilize coastal sage scrub. No special status species were observed in the Mulefat scrub habitat. Both special status birds are leaf gleaners with the wren also eating fruits and berries in season. Neither species has a direct exposure to soil contamination. The representative species selected (Western meadowlark for open areas and the Spotted tohee for thickets) both forage on the ground and represent a maximum exposure to site COPECs. Thus, their exposure is greater than that of special status birds and is protective of them. Wetlands have not been

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			identified in the area of the site, only streambed with riparian habitat. The text that refers to raptors has been removed from the discussion.
EPA Response to Navy response to Specific Comment **#9**		**EPA Response to Navy response to Specific Comment #9** Response accepted.	**Navy response** Noted.
EPA Specific Comment **#9** and Navy response	Page 3-12, Table 3-5	**EPA Specific Comment #9** Selected Representative Terrestrial Species for the SERA: The two selected species are acceptable but the list is incomplete. The sensitive species listed for the site must also be assessed and given the lack of a comprehensive species survey on site (as discussed above), this list could be incomplete.	**Navy response** This draft version of the representative list of species ~~is being~~ was revised to include more species from various feeding guilds and those that are supported by the riparian habitat ~~(See attachment)~~. The results of the spring/summer survey ~~will also be~~ were incorporated if the species identified during this survey ~~would~~ provided more conservative values for the SERA and BERA.
EPA Response to Navy response to Specific Comment **#10**		**EPA Response to Navy response to Specific Comment #10** Response not accepted. There is evidence in the document (as noted above) that there is enough good habitat on site that we may expect sensitive species to be nesting and/or feeding on site. Please include sediment as a pathway.	**Navy response** Sediment was included as complete pathway for birds and mammals in the final SERA.

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EPA Specific Comment **#10** and Navy response	Page 3-13, Section 3.5	**EPA Specific Comment #10** Exposure Pathway Analysis: Considering there is wetland identified on site, it seems sediment should be included as a pathway. If there are sensitive species on site which would congregate in the wetlands, this would be a pathway of concern.	**Navy response** There are no sensitive species regularly using the site ~~because~~ however, ~~they will tend to avoid the ruderal vegetation found there and spend the majority of their time foraging in the coastal sage scrub and riparian mulefat scrub.~~ Rrecent sediment samples were collected during the spring rain event and ~~will be~~ were used to assess the potential for adverse effects to wildlife using the mulefat scrub. Also, please see response to Specific Comment #2.
EPA Response to Navy response to Specific Comment **#11**		**EPA Response to Navy response to Specific Comment #11** No response required. We wished to see the results of the preliminary unadjusted screening results for the non-bioaccumulative compounds before adjusting for exposure. Appendix C1-1 only presents the results for the lower trophic level receptors. It does not present preliminary screening for the higher trophic level receptors **before** adjusting for exposure.	**Navy response** Conservative exposure assumptions are used in the SERA. No adjustments are made to exposure assumptions until the BERA.
EPA Specific Comment **#11** and Navy response	Page 3-13, Section 3.5.1	**EPA Specific Comment #11** Species-Specific Exposure Factors: It would be helpful if the Navy would include a discussion of the results of preliminary screening of the contaminants versus the low BTAG TRVs and the ORNL benchmarks before refining the exposure factors. That would provide a clear picture of what the results are prior to beginning the BERA.	**Navy response** Appendix C1-1 presents the preliminary screening comparison of the maximum reporting limits of all chemicals analyzed to the ORNL Soil benchmarks. The ~~SBCs~~HQs are based on EcoSSL TRVs BTAG-low TRVs and other TRVs from the literature. A brief discussion of

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		of what the results are prior to beginning the BERA.	~~this comparison is~~ these calculations ~~are~~ is also presented in Section 3.2.
EPA Response to Navy response to Specific Comment **#12**		**EPA Response to Navy response to Specific Comment #12** No response required.	**Navy response** Noted.
EPA Specific Comment **#12** and Navy response	Page 3-14, 3-15, Section 3.5.2	**EPA Specific Comment #12** Chemical-Specific Exposure Factors: Since we have no site-specific data on BCFs, the results of these calculations are very uncertain at best. What were the results of the screening?	**Navy response** The BCFp values were ~~obtained from the literature or derived from a chemical-specific octanol/water partition coefficient by the method of Travis and Arms (1988)~~ updated using EPA, 2003 (per general comment #4 above). The BCFi values are derived from studies of earthworm uptake. These BCF values were used in the calculation of ~~the COPEC specific SBCs and the result of the comparison of these estimated SBC values to the maximum soil concentration is~~ HQs for each soil and sediment COPEC and the results are presented in ~~Table 4-2 of the report~~Appendices L5 and L6 of the report. This is the screening that was performed for the site.
EPA Response to Navy response to Specific Comment **#13**		**EPA Response to Navy response to Specific Comment #13** Response accepted.	**Navy response** Noted.

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EPA Specific Comment **#13** and Navy response	Page 3-15, Section 3.6	**EPA Specific Comment #13** Development of Conceptual Site Model: Since no cognizance has been taken of the wetlands on the site, this model is incomplete.	**Navy response** Comment Noted. The conceptual site model was revised to include the sediment and surface water pathways. Agua Chinon wash is a seasonal wash that is fed by rain from storm events and typically does not have sustained flows for more than two weeks. Wetlands are not present. Stream bottom and riparian habitat are present and have been added to the conceptual site model.
EPA Response to Navy response to Specific Comment **#14**		**EPA Response to Navy response to Specific Comment #14** Response not accepted. The Sample, 1996 reference and adjustments is outdated. Please use the Sample and Arenal, 1999, paper as reference below.	**Navy response** The ecological risk assessment was revised to include equations from Sample and Arenal, 1999 to update allometric adjustments in mammals. Based on empirical data from 10 species of birds and 37 chemicals, an average scaling factor of 1.14 is estimated for birds. However, scaling factors for the majority of chemicals evaluated (29 of 37) were not significantly different from 1. Therefore, a scaling factor of 1 was considered most appropriate for interspecies extrapolation among birds.
EPA Specific Comment **#14** and Navy response	Page 3-19, Section 3.6.5,	**EPA Specific Comment #14** Allometric Conversions of TRVs: The Region 9 BTAG recommends against using allometric conversions in screening.	**Navy response** The Navy/BTAG document states that the TRVs MUST be converted using an allometric scaling factor to account for weight differences. Excerpts from DTSC

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			HERD EcoNOTE 2 June 9, 1999 Page 4): "The Human and Ecological Risk Division (HERD) does not recommend allometric conversion of TRVs for body weights which differ by less than 2 orders of magnitude. However, if the generalized BTAG mammalian TRVs are allometrically adjusted for differences in body weight, the allometric adjustment of the generalized mammal and avian TRVs should use a mammalian allometric relationships of body weight 0.66 or body weight 0.75 (Sample, 1996) with sufficient written justification. An avian allometric relationship of body weight 1.15 (Mineau, et al., 1996) should be used. The result should indicate that smaller mammals are less sensitive if the mammal tested had a higher body weight, while smaller birds should be fairly similar in sensitivity to birds with higher body weights." This EcoNote 2 does not say that allometric conversions should not be done in the screening stages, but provides a rationale to allometrically adjust the TRV values. Section 3.6.5 of the report provides a justification for the use of allometric conversions of the TRV and uses the equations from Sample (1996) as suggested by the HERD EcoNote 2. However, these have been updated as discussed in Response to Comment #14. ~~Past discussions with EPA Region 9 (Clarence~~

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			~~Callahan) lead to the use of allometric adjustments for mammals and no allometric adjustment for birds for Navy Clean projects.~~
EPA Response to Navy response to Specific Comment **#15**		**EPA Response to Navy response to Specific Comment #15** No response required. We understand how the Navy calculated the hazard quotients. We would have preferred to see them presented as we described in the original document. Adjustments to the screening hazard quotients should be presented in the BERA after the screening is completed, the results discussed and the problem formulation for the BERA completed.	**Navy response** Noted.
EPA Specific Comment **#15** and Navy response	Page 4-1, Section 4.2.1	**EPA Specific Comment #15** Hazard Quotients: Hazard quotients should be calculated and presented using the maximum soil/sediment concentration and the ORNL benchmarks or BTAG low TRVs, as appropriate before presenting the "adjusted" values.	**Navy response** Hazard quotients were calculated by dividing the maximum soil/sediment concentration by the ORNL benchmarks (Table 4-1) and ~~Eco-SBCs~~TRVs (calculated from the species-specific and chemical-specific factors ~~values including TRVs from toxicology publications~~) (~~Table 4-2~~Appendices L5 and L6). ~~These tables do not present the complete list of all chemicals, but only those preliminary COPECs that were detected in surface soils.~~ Conservative exposure factors were used (EPA 1997, Pgs. 2-2 to 2-4).
EPA Response to Navy		**EPA Response to Navy response to Specific Comment #16**	**Navy response**

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response to Specific Comment **#16**		Response accepted with the caveat that (1) sensitive species must be included if there is any riparian habitat on site (as document and the Navy's response seems to indicate) and (2) the expanded sampling discussion (see comment 5 above) supports lack of pesticide/herbicide detections.	(1) Sensitive species are represented for all habitats on site. See Response to Comment #9. (2) See response to General Comment #2.
EPA Specific Comment **#16** and Navy response	Page 5-1, Table 5-1	**EPA Specific Comment #16** Retained COPECs List for Tier 2, Step 3A BERA: This list is premature as discussed above. A more comprehensive biotic survey of the site and sediment and surface water samples should be provided, the list of receptors must be expanded to include sensitive species, and the list of COPECs should include pesticides and herbicides.	**Navy response** Comprehensive biotic survey – A spring/summer survey was conducted at ~~is planned for~~ the site. Results of the surface water and sediment water samples ~~will be~~ were presented in the ~~Draft Final~~ revised report and the CSM ~~will~~ was also ~~be~~ updated to reflect the results from these samples. List of receptors – The representative list of species ~~is being~~ was revised to include more species from various feeding guilds. The results of the spring/summer survey ~~will also be~~ were incorporated if the species identified during this survey would provide more conservative values for the SERA and BERA. Inclusion of herbicides/pesticides – Please see response to Comment #5.
EPA Response to Navy response to Specific		**EPA Response to Navy response to Specific Comment #17** --	**Navy response** --

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EPA Specific Comment **#17** and Navy response	Appendix D-2	**EPA Specific Comment #17** Working Draft Tier 2, Step 3A of the BERA Process: As noted above, these conclusions have been reached based on insufficient evidence.	**Navy response** Comment Noted. It is Navy's opinion that a better understanding of regulatory agency concerns was developed based on discussions during the ~~last~~ June 10 BCT meeting. This understanding ~~will be~~ is incorporated into the ~~next~~ revised ~~version of the working draft of~~ Tier 2, Step 3A of the BERA process and is presented to the BCT members for their review and comments.
III. Comments on the "Tier 1, animal species-specific exposure factors for Anomaly Area 3" and the "Tier 2 animal species-specific exposure factors for Anomaly Area 3"			
1.		According to the BCT Meeting Minutes from June 10, 2003, it is presumed that the same representative species will be used at Site 1 and AA 3. Final selection of the representative species cannot be completed until complete species lists have been developed for these sites (pending the spring/summer habitat assessment). These species lists should provide the basis for providing the rationale for receptor selection from the various feeding guilds potentially present at the two sites. However, the species listed in Tables 1 and 2 are in concordance with the agreements reached at our June 10, 2003 meeting, with one exception. The loggerhead shrike was proposed as a tertiary trophic level bird species for Site 1 but it is not listed in the tables. Please provide rationale for why the red-shouldered hawk is a conservative	A spring/summer habitat assessment was performed and a representative species list was prepared in coordination with the BCT for the final version of the SERA. Logger head shrike was identified at IRP Site 1, MCAS El Toro. This species was not found at AA 3 and therefore, was not used as a representative species for the site.

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		representative receptor for this feeding guild.	
2.		ERA documents should clearly detail how the Tier 1 and Tier 2 exposure and risk estimates will be calculated for each site. Final acceptance of the approach for incorporating foraging area into the Tier 2 assessment cannot be provided until methods are detailed.	The methods used have been clarified in the text. Site use is defined only spatially (area of site vs. foraging area). Temporal partitioning (site use based on how much of the year a receptor uses the site [for example, migration, hibernation] of site use was not used in either the SERA or BERA [i.e., all animals were assumed to be present at the facility throughout the year].
3.		As stated previously in the June 4, 2003 memorandum from Regina Donohoe, Department of Fish and Game, to Rafat Abbasi, Department of Toxic Substances Control, (Comment 11), food ingestion rates should be based on the updated equations of Nagy (2001), not the older Nagy equations provided by USEPA (1993).	Food ingestion rates from updated equation of Nagy (2001) were incorporated into the exposure model.
4.		References for all the cited exposure factor literature in the tables should be provided so that values can be verified and/or evaluated for their applicability to the habitat at El Toro. The ERA documents should provide rationale for the selection of foraging area values, comparing the relevance of the habitat studied to that at Site 1 or AA 3.	References for cited exposure factors are now listed in tables.
5.		For each of the receptors, please distinguish whether the animal diet partition factor is for invertebrates or vertebrates to clarify what trophic level is being modeled.	Animal diet partition for each receptor was revised to clarify what trophic level is being modeled. Only the predators, the red-shouldered hawk and long-tailed weasel, are assumed to eat vertebrate prey (100% mice for the SERA).
6.		A soil ingestion rate of 3-6%, based on the short-tailed shrew (USEPA, 2000; http://www.epa.gov/ecotox/ecossl/SOPs.htm), indicates the 2% ingestion rate for the ornate shrew is underestimated.	The soil ingestion rate for the shrew will be revised to 6%.

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(3) Responses to Navy's Responses to EPA Comments dated 17 June 2003. Mail Correspondence: Subject – Ecological Issues at Anomaly Area 3 and IRP Site 1 at the Former MCAS El Toro. *Reviewer: Ms. Nicole Moutoux, Project Manager, Environmental Protection Agency, Dated 18 September 2003*

Comment No.	Section/ Page No.	Comment	Response
		ingestion rate for the ornate shrew is underestimated.	
7.		The listed maximum body weight for the western meadowlark, 3 kg, is erroneous.	This value was revised with the correct weight: 0.114 (kg) (Lanyon, 1962).
8.		As stated previously (June 4, 2003 memorandum from Regina Donohoe to Rafat Abbasi; Comment 11), the soil ingestion rate for the ground feeding birds (i.e., western meadowlark, spotted towhee and mourning dove) should be increased. Higher values based on the American woodcock (i.e., 10.4%; Beyer et al., 1994) are recommended.	The woodcock probes deep into soils to extract earthworms. None of the birds at El Toro feed in this manner, therefore the Navy used the original soil ingestion rates for the ground feeding birds.
9.		Three studies on home range of the short-tailed shrew are provided by USEPA (1993). Home ranges for Michigan blue-grass (0.1-0.36 ha) and New York old field (0.03-0.22 ha) habitats are lower than the selected mean value (0.39 ha) for Manitoba tamarack bog habitat. Please justify why the Manitoba study more accurately reflects the conditions at El Toro given that other studies in the U.S. have reported smaller home ranges.	None of the studies adequately represents the foraging area for an arid habitat. Since food is not assumed to be as easy to find as in the mesic New York old field, a value of 0.22 ha (upper end of NY field but lower than other 2 habitats) is used. Please note that the SUF discussed were not used. In the SERA. A more conservative SUF value of 1 was used in the SERA.
10.		As stated previously, (June 4, 2003 memorandum from Regina Donohoe to Rafat Abbasi; Comment 11), the foraging area (0.6 ha) for the deer mouse should be lowered to be more reflective of the values reported in exposure factor reviews (e.g., USEPA, 1993; <0.1 ha or Cal/Ecotox; http:// www.oehha.org /cal_ecotox /report /peromef.pdf). These reviews indicate that the Wolff 91985) study reported values lower than 0.6 ha (e.g., 0.05 ha).	Bowers and Smith (1979) report mean home ranges of 0.128 and 0.094 ha for male and female deer mice, respectively, for the Idaho high desert. This is the most similar to site habitat, so a value of 0.1 ha was assumed for use in estimating exposure. The exposure model was revised to incorporate a smaller home range for use in Tier 2, Step 3a (SUF assumed to be 1 for all receptors in Tier 1). This comment is inconsequential to the SERA.

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11.		Please provide justification as to why the Tier 2 screen involves alteration of the diet partition factors, compared to the Tier 1 table, for the deer mouse, meadowlark and spotted towhee.	Tier 1 diet partition factors use conservative values to estimate diet intake values ("...the diet is composed entirely of whichever type of food is most contaminated." [EPA 1997, Pg 2-3]). In Tier 2, these values are revised to more realistically estimate diet intake values based on field studies reported in the literature.

References:

EPA, 1997. Ecological Risk Assessment Guidance fro Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final. EPA 540-R-97-006.

Sample, B.E. and C.A. Arenal, 1999. 1999. Allometric Models for inter-species Extrapolation for Wildlife Toxicity Data. Bull. Environ. Contam. Tox. 62:653-663.

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IRP Site 3 Surface and Subsurface Soil Sampling Results – Pesticides/PCBs and Herbicides

Since interviews with former station personnel indicate that construction debris generated during the construction of the investigation-derived waste (IDW) management area at IRP Site 3 was placed at AA 3, the pesticides/polychlorinated biphenyls and herbicides sampling results from IRP Site 3 surface and subsurface soil samples were reviewed.

Surface and subsurface soils samples collected from Unit 1 of IRP Site 3 as part of Phase I RI and Phase II RI were analyzed for TPH, benzene, toluene, ethylbenzene and xylenes (BTEX), VOCs, SVOCs, pesticides/polychlorinated biphenyls, herbicides, polyaromatic hydrocarbons, radionuclides, total kjedahl nitrogen, total organic carbon, biochemical oxygen demand, chemical oxygen demand, metals and dioxins.

From all investigations, 6 surface soil samples were collected and analyzed for pesticides/polychlorinated biphenyls and 7 surface soil samples were analyzed for herbicides. Detected analytes include 4,4'-dichlorodiphenyldichloroethane (4,4'-DDD), 4,4'-dichlorodiphenyldichloroethene (4,4'-DDE), 4,4'-dichlorodiphenyltrichloroethane (4,4'-DDT) and 2,4,5-trichlorophenoxyproprionic acid (2,4,5-TP). A summary of their frequency of detection, maximum, minimum concentrations, and their respective PRGs and MCAS El Toro background concentrations are presented in the Table 1 below.

All the pesticides/polychlorinated biphenyls and herbicides detected were below their respective PRG concentrations and all were also less than the MCAS El Toro background concentrations with the exception of 4,4'-DDD.

Table 1: Summary Table for Detected Pesticide/Polychlorinated biphenyls and Herbicides

Analyte	Number of Analyses	Number of Detections	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	USEPA PRG (mg/kg)	MCAS El Toro Background Concentrations (mg/kg)
Pesticides/PCBs						
4,4'-DDD	6	1	0.293J	0.293J	1.9	0.0586
4,4'-DDE	6	2	0.0102J	0.0477J	1.3	0.233
4,4'-DDT	6	3	0.0105J	0.209J	1.3	0.272
Herbicides						
2,4,5-TP	7	1	0.0496	0.0496	520	–

From all investigations, 15 subsurface soil samples were collected and analyzed for

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pesticides/polychlorinated biphenyls and 16 subsurface soil samples were analyzed for herbicides. Detected analytes include endosulfan II, 2,4,5-TP, 2,4,5-trichlorophenoxyacetic acid, 2,4-dichlorophenoxyproprionic acid (2,4-DB), 2-methyl-4-chlorophenoxyproprionic acid (MCPP). A summary of their frequency of detection, maximum, minimum concentrations, and their respective PRGs and MCAS El Toro background concentrations are presented in the Table 2 below.

Endosulfan II was detected at a concentration that is below the MCAS El Toro background concentrations. With the exception of MCPP, all other detected herbicides were four orders of magnitude less than their corresponding residential PRGs.

Table 2: Summary Table for Detected Pesticide/Polychlorinated biphenyls and Herbicides

Analyte	Number of Analyses	Number of Detections	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	USEPA PRG (mg/kg)	MCAS El Toro Background Concentrations (mg/kg)
Pesticides/PCBs						
Endosulfan II	15	1	0.00018J	0.00018J	–	0.0106
Herbicides						
2,4,5-TP	16	1	0.0613J	0.0613J	520	–
2,4,5-trichlorophenoxy acetic acid	16	1	0.0418J	0.0418J	650	–
2,4-DB	16	1	0.098N	0.098N	520	–
MCPP	16	3	35	62.7	65	–

NOTES:
N - presumptive evidence to tentatively identify organic compound

LIST OF ACRONYMS AND ABBREVIATIONS

AA	Anomaly Area
BAFS	bioaccumulation factors
BCF	bioconcentration factor
BCF_i	soil to invertebrate bioconcentration factor
BCF_p	soil to plant bioconcentration factor
BCT	Base Realignment and Closure Cleanup Team
BERA	baseline ecological risk assessments
Bgs	below ground surface
CCS	coastal sage scrub
COPEC	chemical of potential ecological concern

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CSM	conceptual site model
CSS	coastal sage scrub
DTSC	Department of Toxic Substances Control
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
ha	hectare
HERD	Human and Ecological Risk Division
HQ	hazard quotient
IRA	Interim Removal Action
IRP	Installation Restoration Program
kg	kilogram
LOAEL	lowest observed adverse effect level
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
NOAEL	no observed adverse effect level
NY	New York
ORNL	Oak Ridge National Laboratory
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
RI	remedial investigation
RSE	removal site evaluation
SBC	soil based concentrations
SERA	screening ecological risk assessment
SSL	soil screening levels
SUF	site use factor
TEF	toxicity equivalency factor
TEQ	toxicity equivalency quotient
TRV	toxicity reference value
U.S.	United States
USEPA	United States Environmental Protection Agency

Draft

Expanded Site Inspection Report, Anomaly Area 3

FORMER MARINE CORPS AIR STATION, EL TORO, CALIFORNIA

November 2003

Department of the Navy
Commander, Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

NAVFAC
Naval Facilities Engineering Command
SOUTHWEST DIVISION

Draft

Expanded Site Inspection Report, Anomaly Area 3

FORMER MARINE CORPS AIR STATION, EL TORO, CALIFORNIA

November 2003

Prepared for:

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Contract Number N62742-94-D-0048, CTO 0078

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November 7, 2003

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Fellow Federal Facility Agreement (FFA) Representatives:

SUBJECT: DRAFT EXPANDED SITE INSPECTION REPORT, ANOMALY AREA 3, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO, CALIFORNIA

Submitted for your review is the Draft Expanded Site Inspection Report, Anomaly Area 3, Former Marine Corps Air Station (MCAS) El Toro, California. This Expanded Site Inspection (ESI) report provides a comprehensive assessment of the nature, extent, and potential impact of contamination to human health and the environment by evaluating the results of all investigations at Anomaly Area 3, including a revised ecological risk assessment.

Consistent with the intent of the FFA, the Navy consulted with the Base Realignment and Closure (BRAC) Cleanup Team (BCT) regarding implementation of assessment and response actions at Anomaly Area 3. The assessment and development of response action for Anomaly Area 3 was intended to be administratively handled as part of Installation Restoration Program (IRP) Site 3. It was anticipated that a removal action would be required to facilitate and expedite implementation of the action at Anomaly Area 3 and allow quicker transfer of the property. However, based on the investigations conducted at the site and the human health and ecological risk

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assessment results, the Navy, with the concurrence of the other members of the BCT, presents all findings at Anomaly Area 3 in this draft ESI report. You will find that based on this report, the Navy recommends no further action for the site.

The enclosed ESI report, while not formally listed as a primary document in the FFA, meets the requirements of such, and hence warrants a 60-day review period and represents a significant milestone in the Anomaly Area 3 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. Please provide any comments by **Friday, January 16, 2004.**

Thank you for your continued support in this program. Should you have questions or need additional information, please contact Mr. Karnig Ohannessian, Remedial Project Manager at (619) 532-0796 or me at (619) 532-0784.

Sincerely,

F. ANDREW PISZKIN
Base Realignment and Closure
Environmental Coordinator
By direction of the Commander

Encl: (1) Draft Expanded Site Inspection Report, Anomaly Area 3, MCAS El Toro – Dated November 2003

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